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FILE 'CAPLUS' ENTERED AT 11:54:29 ON 26 FEB 2004

L1 2 (MIME OR MIM) AND THIOL
L2 1259 (NANOPARTCL? OR PARTCL?) AND THIOL
L3 50 (NANOPARTCL? OR PARTCL?) AND ((DETECT? OR ANALY?) (4A) THIOL?)
L4 87 (GAS (2A) SENSOR?) (S) NANOPARTICL? OR DISPLAC?)
L6 1432 ((GAS? OR VAPOR? OR ODOUR?) (3A) (SENSOR? OR DETECT?)) (S) (MIME OR MIM OR NANOPARTICL? OR PARTICL? OR NANO?)
L7 8 L6 AND (THIOL OR MERCAPTAN?)

L1 ANSWER 1 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

TI Polymer coated platinum metallic nanoparticles as hydrogen absorption body

L1 ANSWER 2 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

TI Controlled and reversible aggregation of biotinylated gold nanoparticles with Streptavidin

L1 ANSWER 3 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

TI Methods and kits containing nanoparticle conjugated oligonucleotide probes for detection of nucleic acids using PCR

L1 ANSWER 4 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

TI Chemically functional alkanethiol derivatized magnetic nanoparticles

L1 ANSWER 5 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

TI Surface-modified metal chalcogenide nanoparticles and their manufacture

L1 ANSWER 6 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

TI Electrochemical Infrared Characterization of CO Domains on Ruthenium-Decorated Platinum Nanoparticles

L1 ANSWER 7 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

TI Formation of Cu and Cu₂O nanoparticles by variation of the surface ligand: Preparation, structure, and insulating-to-metallic transition

L1 ANSWER 8 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

TI Solvothermal routes to capped oxide and chalcogenide nanoparticles

L1 ANSWER 9 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

TI Colorimetric detection of thiol-containing amino acids using gold nanoparticles. [Erratum to document cited in CA136:398013]

L1 ANSWER 10 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

TI Colorimetric detection of thiol-containing amino acids using gold nanoparticles

L1 ANSWER 11 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

TI Surface modification of CdSe nanoparticles using linear and dendritic ligands

L1 ANSWER 12 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

TI Electoreflectance Study of Gold Nanoparticles Immobilized on an Aminoalkanethiol Monolayer Coated on a Polycrystalline Gold Electrode Surface

L1 ANSWER 13 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

TI Patterning of Organic Monolayers on Silver via Surface-Induced Photoreaction

L1 ANSWER 14 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

TI Preparation of luminescent-doped inorganic nanoparticles and usage as labels for biomolecule probes

L1 ANSWER 15 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

TI Studies on the Reversible Aggregation of Cysteine-Capped Colloidal Silver Particles Interconnected via Hydrogen Bonds

L1 ANSWER 16 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

TI Stability and Exchange Studies of Alkanethiol Monolayers on Gold-Nanoparticle-Coated Silica Microspheres

L1 ANSWER 17 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

TI Preparation of avidin-labeled protein nanoparticles as carriers for biotinylated peptide nucleic acid

L1 ANSWER 18 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

TI Fabrication of gas-sensing films based on nanoparticles grafted with electronically or chemically interacting organic molecules

L1 ANSWER 19 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

TI Ligand-induced gold nanocrystal superlattice formation in colloidal solution

L1 ANSWER 20 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

TI Peptomer Aluminum Oxide Nanoparticle Conjugates as Systemic and Mucosal Vaccine Candidates: Synthesis and Characterization of a Conjugate Derived from the C4 Domain of HIV-1MN Gp120

L1 ANSWER 21 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

TI Preparation and properties of surface-modified CdS nanoparticles immobilized on gold electrode substrates

L1 ANSWER 1 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2004:76834 CAPLUS

DOCUMENT NUMBER: 140:129383

TITLE: Polymer coated platinum metallic nanoparticles as hydrogen absorption body

INVENTOR(S): Kitagawa, Hiroshi; Yamauchi, Miho; Ikeda, Ryuichi; Isobe, Yuko

PATENT ASSIGNEE(S): Japan Science and Technology Corporation, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

PATENT NO. KIND DATE APPLICATION NO. DATE

JP 2004027346 A2 20040129 JP 2002-189756 20020628

PRIORITY APPLN. INFO.: JP 2002-189756 20020628

AB Provided hydrogen absorption body is a platinum group metallic nanoparticles, such as Pt and Pd, with average diameter of 1-10 nm that are coated with an organic polymer containing substituent groups selected from carbonyl group, carboxyl group, hydroxyl group, ammonium group, amino group, sulfonyl group, thiol group, and sulfide group, such as polyvinyl alc. and poly(N-vinyl-2-pyrrolidone). Thus, platinum chloride hydrate hexahydrate and poly(N-vinyl-2-pyrrolidone) were dissolved in water/propanol solvent, and then heated to 100° for 3 h to obtain polymer coated Pt nanoparticles.

L1 ANSWER 2 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:635108 CAPLUS

TITLE: Controlled and reversible aggregation of biotinylated gold nanoparticles with Streptavidin

AUTHOR(S): Perez-Luna, Victor H.; Aslan, Kadir

CORPORATE SOURCE: Chemical and Environmental Engineering Department, Illinois Institute of Technology, Chicago, IL, 60616, USA

SOURCE: Abstracts of Papers, 226th ACS National Meeting, New York, NY, United States, September 7-11, 2003 (2003), ORGN-020. American Chemical Society: Washington, D.C.

CODEN: 69EKY9

DOCUMENT TYPE: Conference; Meeting Abstract

LANGUAGE: English

AB Biotinylation of gold nanoparticles was accomplished using a two-step surface modification procedure. In the first step, a carboxyl-terminated alkane thiol was chemisorbed on the gold nanoparticles, and in the second step these carboxyl groups were further reacted with ((+)-biotinyl-3,6,9,-trioxaundecanediamine) and 2-(2-aminoethoxy)ethanol). This procedure resulted in stable, ligand-modified gold nanoparticles. Upon addition of streptavidin, the biotinylated gold nanoparticles aggregated by means of specific biomol. recognition. Their aggregation was studied by optical absorption spectroscopy. Controlled aggregation of biotinylated gold nanoparticles resulted in a shift in the surface plasmon resonance peak and broadening of the absorption spectrum of the nanoparticles. The extent of aggregation was found to be dependent on the concns. of both streptavidin and biotinylated gold nanoparticles. Maximum rate of aggregation was observed when 24 nM of streptavidin and 0.80 nM of biotinylated gold nanoparticles were used. Reversal of nanoparticle aggregation was accomplished by the addition of soluble biotin to the streptavidin-nanoparticle aggregates. Kinetic anal. of the absorbance data showed that streptavidin-induced aggregation of biotinylated gold nanoparticles could be interpreted in terms of a Reaction-Limited Colloidal Aggregation (RLCA) model. This indicates that optical absorption spectroscopy could provide a quant. measurement of the aggregation process.

L1 ANSWER 3 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:454606 CAPLUS

DOCUMENT NUMBER: 139:31760

TITLE: Methods and kits containing nanoparticle conjugated oligonucleotide probes for detection of nucleic acids using PCR

INVENTOR(S): Storhoff, James J.; Fritz, Brett M.; Herrmann, Mark

PATENT ASSIGNEE(S): Nanosphere, Inc., USA

SOURCE: PCT Int. Appl., 74 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

PATENT NO. KIND DATE APPLICATION NO. DATE

WO 2003048769 A1 20030612 WO 2002-US38069 20021127
US 2003143604 A1 20030731 US 2002-306630 20021127
PRIORITY APPLN. INFO.: US 2001-334644P P 20011130

AB The present invention relates to the use of nanoparticle detection probes to monitor amplification reactions, especially polymerase chain reactions ('PCR'). More specifically, the present invention involves the use of nanoparticles oligonucleotide conjugates treated with a protective agent such as bovine serum albumin in an homogeneous assay format in order to quant. and qual. detect a target polynucleotide. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compns. and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids. The preparation of colloidal gold nanoparticles from HAuCl₄ is described. Particles show a color change upon aggregation. 3'-Thiol terminated oligonucleotides were immobilized on the surface of these particles. Oligonucleotide dependent aggregation and color changes were demonstrated and the hybridization conditions optimized. REFERENCE COUNT: 3

L1 ANSWER 4 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:314584 CAPLUS

DOCUMENT NUMBER: 139:77614

TITLE: Chemically functional alkanethiol derivatized magnetic nanoparticles

AUTHOR(S): Fleming, David A.; Napolitano, Michael; Williams, Mary Elizabeth

CORPORATE SOURCE: Department of Chemistry, 152 Davey Laboratory, The Pennsylvania State University, University Park, PA, 16802, USA

SOURCE: Materials Research Society Symposium Proceedings (2003), 746(Magnetoelectronics and Magnetic Materials--Novel Phenomena and Advanced Characterization), 207-212

CODEN: MRSPDH; ISSN: 0272-9172

PUBLISHER: Materials Research Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Chemical functional magnetic nanoparticles, comprised of an Fe core encased in a thin Au shell, were prepared by sequential high temperature decomposition of organometallic compds. in a coordinating solvent. A novel approach to encapsulate the Fe core in Au was developed. TEM anal. confirms that the nanoparticles are monodisperse (<SYM187>20%) with average diams. of 8 nm. The nanoparticles were subsequently functionalized with alkanethiolate ligands, which prevent aggregation, enable solubility in a range of solvents (both hydrophobic and hydrophilic), and permit subsequent derivatization (e.g., via ligand exchange reactions). The functionalized particles are characterized using high-resolution transmission electron microscopy (HRTEM), x-ray powder diffraction (XRD), and UV-visible (UV-Vis) absorption spectroscopy. We have utilized place-exchange to impart chemical functionality to the nanoparticles by attaching either (i) thiol-derivatized redox moieties (e.g., ferrocene) or (ii) alkanethiols with terminal reactive groups such as alcs., amines, and carboxylic

acids. This paper presents our preliminary investigations of the voltammetry of the former class of these magnetic core/shell nanoparticles. REFERENCE COUNT: 34

L1 ANSWER 5 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:239729 CAPLUS

DOCUMENT NUMBER: 138:257345

TITLE: Surface-modified metal chalcogenide nanoparticles and their manufacture

INVENTOR(S): Hayashi, Toyoji; Nakayama, Tokuo; Iijima, Tomonori

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

PATENT NO. KIND DATE APPLICATION NO. DATE

JP 2003089522 A2 20030328 JP 2001-277036 20010912

PRIORITY APPLN. INFO.: JP 2001-277036 20010912

AB Metal chalcogenide nanoparticles whose surfaces are modified with thiols and amines are manufactured by the following steps: (1) chalcogenizing a metal compound in a nonaq. solvent in the presence of a thiol compound for formation of colloid or slurry of metal chalcogenide nanoparticles, (2) neutralizing the colloid or slurry, (3) dispersing into an organic solvent, and (4) treating with an amine compound. The obtained nanoparticles have high solubility to wide variety of organic solvents including alkane solvents. Uniform and high-d. organic sol or gel can be provided by using the nanoparticles.

L1 ANSWER 6 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:77877 CAPLUS

DOCUMENT NUMBER: 138:277703

TITLE: Electrochemical Infrared Characterization of CO Domains on Ruthenium-Decorated Platinum Nanoparticles

AUTHOR(S): Park, Sungho; Wieckowski, Andrzej; Weaver, Michael J.

CORPORATE SOURCE: Department of Chemistry, Purdue University, West Lafayette, IN, 47907, USA

SOURCE: Journal of the American Chemical Society (2003), 125(8), 2282-2290

CODEN: JACSAT; ISSN: 0002-7863

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Spectra obtained by electrochem. IR reflection absorption spectroscopy (EC-IRAS) for CO adlayers formed by partial CO dosing on various Ru-decorated Pt nanoparticle films are reported. The need to achieve a well distributed rather than aggregated metal nanoparticle array is demonstrated, given that such nanoparticle aggregates induce complex dielec. behavior. The strategy here is to use an organic glue matrix (short chain SAMs) between the nanoparticles and the Au substrates. The observed promotion in CO electrooxidn. by the existence of a Ru island on Pt nanoparticles, of interest to fuel-cell

catalysis, showed a strong relation with Ru surface concns., consistent with previous studies on single crystal or polycryst. bimetallic surfaces. Two distinctive CO IR bands, one for the Pt-CO and one for Ru-CO domain were found after the dipole coupling of CO within the 2 CO domains was minimized. Interestingly, those 2 CO bands showed independent electrooxidn. behavior with electrode potential changes. Also, the electrooxidn. of CO on large Ru islands is less facile than on small Ru islands. The activity of com. Pt/Ru alloy nanoparticles to CO stripping was tested and IRAS spectra were reported as a comparison to the Ru-decorated Pt nanoparticles.

REFERENCE COUNT: 63

L1 ANSWER 7 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:888302 CAPLUS

DOCUMENT NUMBER: 138:176235

TITLE: Formation of Cu and Cu₂O nanoparticles by variation of the surface ligand: Preparation, structure, and insulating-to-metallic transition

AUTHOR(S): Aslam, Mohammed; Gopakumar, G.; Shoba, T. L.; Mulla, I. S.; Vijayamohanan, K.; Kulkarni, S. K.; Urban, J.; Vogel, W.

CORPORATE SOURCE: Physical and Materials Chemistry Division, National Chemical Laboratory, Pune, India

SOURCE: Journal of Colloid and Interface Science (2002), 255(1), 79-90

CODEN: JCISA5; ISSN: 0021-9797

PUBLISHER: Elsevier Science

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Copper and copper(I) oxide nanoparticles protected by self-assembled monolayers of thiol, carboxyl, and amine functionalities [X(CH₂)_n-CH₃, where X can be -COOH, -NH₂, or -SH] were prepared by the controlled reduction of aqueous copper salts using Brust synthesis. The optical absorption spectrum ($\lambda_{\text{max}} = 289 \text{ nm}$) is found to be invariant with the nature of the capping mol. while the particle shape and distribution are found to depend strongly on it. A comparison of the protection efficiency for different capping agents such as dodecanethiol (DDT), tridecylamine (TDA), and lauric acid (LA) suggests that although zerovalent Cu is initially formed for dodecanethiol, all other cases allow oxidation to Cu₂O nanoparticles. Despite the variation in particle size and relative stability, nanoparticles were found to form oxides after a few days, especially for the case of LA and TDA surface capping. For all the samples studied, the size was found to be 4-8 nm by high-resolution TEM. The protective ability is found to be better for dodecanethiol SAM (similar to the case of Au and Ag nanoparticles), while the order of capping efficiency varies as Cu-DDT > Cu-TDA > Cu-LA. A reversible metal-insulator transition (MIT) in capped nanoparticles of Cu using temperature-dependent elec. resistivity measurement is also demonstrated. However, the LA-capped sample does not show any such transition, possibly due to the oxide formation.

REFERENCE COUNT: 31

L1 ANSWER 8 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:841598 CAPLUS

DOCUMENT NUMBER: 138:127318

TITLE: Solvothermal routes to capped oxide and chalcogenide nanoparticles
AUTHOR(S): Gautam, Ujjal K.; Ghosh, Moumita; Rajamathi, Michael; Seshadri, Ram
CORPORATE SOURCE: Solid State and Structural Chemistry Unit, Indian
Institute of Science, Bangalore, 560 012, India

SOURCE: Pure and Applied Chemistry (2002), 74(9), 1643-1649

CODEN: PACHAS; ISSN: 0033-4545

PUBLISHER: International Union of Pure and Applied Chemistry

DOCUMENT TYPE: Journal; General Review

LANGUAGE: English

AB A review. We review our recent contributions to the use of solvothermal methods for the preparation of different oxide and chalcogenide nanoparticles. We have prepared sub 10-nm <SYM103>-Fe₂O₃, ZnFe₂O₄, and CoFe₂O₄ particles by the decomposition of the corresponding cupferron complexes in the presence of n-octylamine or n-dodecylamine in solvothermal toluene. Similarly, dodecanethiol-capped chalcogenide nanoparticles of CdSe have been prepared by reacting cadmium stearates with H₂Se under solvothermal conditions. The H₂Se is generated in situ by the reduction of Se by tetralin. Using this latter technique, we have also been able to prepare PbSe and PbI₂ in toluene under solvothermal conditions, albeit in bulk (rather than nanocryst.) form. In the preparation of PbI₂, HI is prepared by the in situ reduction of I₂ by tetralin.

REFERENCE COUNT: 25

L1 ANSWER 9 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:327455 CAPLUS

DOCUMENT NUMBER: 139:145977

TITLE: Colorimetric detection of thiol-containing amino acids using gold nanoparticles. [Erratum to document cited in CA136:398013]

AUTHOR(S): Zhang, Felicia X.; Han, Li; Israel, Lisa B.; Daras, Jason G.; Maye, Mathew M.; Ly, Nam K.; Zhong, Chuan-Jian

CORPORATE SOURCE: Department of Chemistry, State University of New York at Binghamton, Binghamton, NY, 13902, USA

SOURCE: Analyst (Cambridge, United Kingdom) (2002), 127(4), 565

CODEN: ANALAO; ISSN: 0003-2654

PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Line 1 of the Results and discussion section and line 1 of the caption to Figure 1 should read "... Au13 nm (.apprx.7 nM) ..." rather than "... Au13 nm (.apprx.7 pM)...", as previously published. Line 2 of the caption to Figure 2 should read "... 3 nm Au13 nm ..." rather than "... 3 pM Au13 nm" as previously published.

L1 ANSWER 10 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:252164 CAPLUS

DOCUMENT NUMBER: 136:398013

TITLE: "Colorimetric detection of thiol-containing amino acids using gold nanoparticles"

AUTHOR(S): Zhang, Felicia X.; Han, Li; Israel, Lisa B.; Daras, Jason G.; Maye, Mathew M.; Ly, Nam K.; Zhong, Chuan-Jian

CORPORATE SOURCE: Department of Chemistry, State University of New York
at Binghamton, Binghamton, NY, 13902, USA

SOURCE: **Analyst (Cambridge, United Kingdom) (2002), 127(4), 462-465**

CODEN: ANALAO; ISSN: 0003-2654

PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

AB This paper reports findings of an investigation of the unusual colorimetric change of gold nanoparticles in the presence of thiol-containing amino acids such as homocysteine, cysteine and glutathione. The colorimetric change for homocysteine exhibits a rate that is about two orders of magnitude higher than that for cysteine, and at least five orders of magnitude higher than that for glutathione. The reactivity is effectively reduced or suppressed by the co-existence of either cysteine or glutathione. It is believed that the reactivity involves encapsulation of the particles by the thiol-containing amino acids which is followed by crosslinking at the encapsulating shells. In comparison with cysteine and glutathione, homocysteine has a slower encapsulating rate but a faster crosslinking rate. Implications of the findings of the interfacial encapsulation and crosslinking reactivities of gold nanoparticles to potential nanoparticle-enhanced anal. detection of thiol-containing amino acids are also briefly discussed.

REFERENCE COUNT: 32

L1 ANSWER 11 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:188223 CAPLUS

TITLE: Surface modification of CdSe nanoparticles using linear and dendritic ligands

AUTHOR(S): Zhang, Chunxin; O'Brien, Stephen; Balogh, Lajos

CORPORATE SOURCE: Department of Internal Medicine, Center for Biologic
Nanotechnology, University of Michigan, Ann Arbor, MI, 48109-0533, USA

SOURCE: Abstracts of Papers, 223rd ACS National Meeting, Orlando, FL, United
States, April 7-11, 2002 (2002), COLL-305. American Chemical Society: Washington,
D. C.

CODEN: 69CKQP

DOCUMENT TYPE: Conference; Meeting Abstract

LANGUAGE: English

AB This work describes the surface modification of CdSe nanoparticles with amphiphilic poly(amidoamine) (PAMAM) dendrimers and linear aliphatic amine, acid and thiol. While hydrophilic full generation dendrimers with primary amine termini caused aggregation of the CdSe particles, the amphiphilic dendrimers proved to be useful caps for the CdSe nanocrystals. Complete exchange of the original TOPO/TOP caps was achieved through a CdSe/pyridine intermediate. It was found that both functional groups (which interact with the nanoparticle surface) and hydrophobic chains (which provide the particles with solubility in the solvent) were necessary to stabilize the CdSe nanoparticles. The modified CdSe nanocrystals were characterized using NMR, UV-visible absorption, photoluminescence (PL) and TEM. UV-vis absorption and PL of such CdSe systems were studied during a two months period. Properties of the dendritic and linear ligands passivated CdSe systems are compared, and found to be dependent on the functionalities of the surface ligands.

L1 ANSWER 12 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:44755 CAPLUS

DOCUMENT NUMBER: 136:253924

TITLE: Electroreflectance Study of Gold Nanoparticles Immobilized on an Aminoalkanethiol Monolayer Coated on a Polycrystalline Gold Electrode Surface

AUTHOR(S): Sagara, Takamasa; Kato, Naoyuki; Nakashima, Naotoshi

CORPORATE SOURCE: "Organization and Function", PRESTO, JST, Japan

SOURCE: Journal of Physical Chemistry B (2002), 106(6), 1205-1212

CODEN: JPCBFK; ISSN: 1089-5647

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Citrate-stabilized gold (Au) nanoparticles of a diameter of 11 nm were immobilized on a monolayer of aminoundecanethiol (1-mercapto-11- aminoundecane) coated on a polycryst. Au electrode surface. A quartz crystal microbalance measurement of the deposition process of the Au particles revealed that the saturated deposition amount is 10% of a 2D close-packed monoparticle layer, and this coverage was confirmed by an atomic force microscopy (AFM) observation. The Au particle layer was characterized by the use of potential-modulated UV-visible reflectance spectroscopy (electroreflectance spectroscopy). The electroreflectance (ER) band at the plasmon absorption wavelength of the Au particles was pos.-going, indicating that the plasmon absorption becomes stronger when changing the electrode potential to more neg. The plasmon absorption band shifted to longer wavelength when the electrode potential approaches to the potential of zero-charge, E_{pzc} , of the Au electrode. The ER signal intensity also showed a maximum around E_{pzc} . In light of good electronic communication between the Au electrode substrate and the deposited Au particles as demonstrated by reversible redox waves of solution phase species, the ER signal was interpreted as being originated from the potential-dependent charging-discharging process of the immobilized Au particles; a more neg. charged Au particle exhibits a stronger and sharper plasmon absorption band at a shorter wavelength. The implications of the ER signal were discussed.

REFERENCE COUNT: 61

L1 ANSWER 13 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:2865 CAPLUS

DOCUMENT NUMBER: 136:158723

TITLE: Patterning of Organic Monolayers on Silver via Surface-Induced Photoreaction

AUTHOR(S): Han, Sang Woo; Lee, Inhyung; Kim, Kwan

CORPORATE SOURCE: Laboratory of Intelligent Interface School of Chemistry and Molecular Engineering and Center for Molecular Catalysis, Seoul National University, Seoul, 151-742, S. Korea

SOURCE: Langmuir (2002), 18(1), 182-187

CODEN: LANGD5; ISSN: 0743-7463

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB 4-Nitrobenzenethiol (4-NBT) is readily converted on silver to 4-aminobenzenethiol by irradiation with a visible laser. This is clearly evidenced from the surface-enhanced Raman scattering and the XPS measurements as well as from a coupling reaction to form amide bonds. The source of hydrogen atoms in the surface-induced photoreaction is presumed to be water or solvent mols. trapped inside the 4-NBT monolayer. The present surface-induced photoreaction allows the authors to readily prepare patterned binary monolayers on Ag that will show different chemical reactivities. Using the binary monolayers as a lithog. template, the authors can conduct site-specific chemical reactions. The authors also demonstrate that a typical biomineral, i.e., calcite, can be grown selectively on either the nitro group terminated regions or the amine group terminated regions by adjusting the crystal growth conditions. Since the amine group can be derivatized further to give, for instance, a thiol terminus, the present surface modification method must be as beneficial as the hitherto known methods specifically for the construction of two-dimensional heterostructures consisting of different kinds of nanoparticles. REFERENCE COUNT: 50

L1 ANSWER 14 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:814004 CAPLUS

DOCUMENT NUMBER: 135:341136

TITLE: Preparation of luminescent-doped inorganic nanoparticles and usage as labels for biomolecule probes

INVENTOR(S): Hoheisel, Werner; Petry, Christoph; Bohmann, Kerstin; Haase, Markus; Riwotzki, Karsten

PATENT ASSIGNEE(S): Bayer A.-G., Germany

SOURCE: Ger. Offen., 12 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

PATENT NO. KIND DATE APPLICATION NO. DATE

DE 10106643 A1 20011108 DE 2001-10106643 20010212

WO 2001086299 A2 20011115 WO 2001-EP4545 20010423

WO 2001086299 A3 20020523

EP 1282824 A2 20030212 EP 2001-931636 20010423

JP 2003532898 T2 20031105 JP 2001-583192 20010423

US 2004014060 A1 20040122 US 2003-275355 20030414

PRIORITY APPLN. INFO.: DE 2000-10021674 A1 20000505

DE 2001-10106643 A 20010212 WO 2001-EP4545 W 20010423

AB The invention concerns luminescent-doped inorg. nanoparticles that are used as labels for affinity mols. e.g. nucleic acids, antibodies, proteins, etc.; affinity mols. are directly attached to the nanoparticles or via linker groups, e.g. thiols, amines, imidazoles, mol. self-assemblies, etc. Thus europium-doped phosphoric acid, lanthanum(3+) salt (1:1) was prepared by a previously described wet chemical method; the obtained milky dispersion was centrifuged, dialyzed and dried to obtain the desired particle size. The LaPO₄:Eu nanoparticles were coated with silica using a basic sodium water glass solution; separated by ethanol precipitation, centrifugation, ultrasound dispersion,

decanting and drying. The silica coated nanoparticles were amine-activated with 3-aminopropyltriethoxysilane and treated with sulfosuccinimidyl 4-(N-maleimido-methyl)cyclohexane-1-carboxylate (sulfo-SMCC) crosslinker. Antibodies to <SYM97>-actin were thiol-activated in a 2-iminothiolane solution and incubated with the treated luminescent-doped inorg. nanoparticles; the obtained luminescent probes were used to visualize actin filaments in rabbit muscles by confocal laser scanning microscopy.

L1 ANSWER 15 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:631171 CAPLUS

DOCUMENT NUMBER: 135:323125

TITLE: Studies on the Reversible Aggregation of Cysteine-Capped Colloidal Silver Particles Interconnected via Hydrogen Bonds

AUTHOR(S): Mandal, Saikat; Gole, Anand; Lala, Neeta; Gonnade, Rajesh; Ganvir, Vivek; Sastry, Murali

CORPORATE SOURCE: Materials Chemistry Division, National Chemical Laboratory, Pune, 411 008, India

SOURCE: Langmuir (2001), 17(20), 6262-6268

CODEN: LANGD5; ISSN: 0743-7463

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The surface modification of aqueous Ag colloidal particles with the amino acid cysteine and the crosslinking of the colloidal particles in solution is described. Capping of the Ag particles with cysteine is accomplished by a thiolate bond between the amino acid and the nanoparticle surface. The Ag colloidal particles are stabilized electrostatically by ionizing the carboxylic acid groups of cysteine. Aging of the cysteine-capped colloidal solution leads to aggregation of the particles via hydrogen bond formation between amino acid mols. located on neighboring Ag particles. The aggregation is reversible upon heating the solution $>60^{\circ}$. The rate of crosslinking of the Ag particles via hydrogen bond formation may be accelerated by screening the repulsive electrostatic interactions between the particles using salt. The process of aggregation and heat-induced dispersion of the particles was studied by UV-visible spectroscopy, laser light scattering, and TEM measurements. REFERENCE COUNT: 53

L1 ANSWER 16 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:504614 CAPLUS

DOCUMENT NUMBER: 135:232116

TITLE: "Stability and Exchange Studies of Alkanethiol Monolayers on Gold-Nanoparticle-Coated Silica Microspheres"

AUTHOR(S): Fleming, Michael S.; Walt, David R.

CORPORATE SOURCE: The Max Tishler Laboratory for Organic Chemistry
Department of Chemistry, Tufts University, Medford, MA, 02155, USA

SOURCE: Langmuir (2001), 17(16), 4836-4843

CODEN: LANGD5; ISSN: 0743-7463

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Self-assembled monolayers (SAMs) of carboxylate- and amine-terminated alkanethiols were formed on Au-nanoparticle-coated microspheres. The stability and place-exchange reactions of fluorescently labeled derivs. of these monolayers were studied as a function of time and storage conditions. Changes in the fluorescence intensity of the derivatized SAMs were monitored using fluorescence microscopy. Gold-nanoparticle-coated microspheres were prepared by 1st derivatizing SiO₂ microspheres with a thiol-containing silane followed by self-assembly of the Au nanoparticles onto the microsphere surfaces. Nanoparticle assembly was performed by mixing thiol-activated SiO₂ with a citrate-stabilized solution of Au nanoparticles in ultrapure H₂O. The mean diameter of the Au particles was 14.5 ± 0.9 nm as determined by TEM. The mean diameter of the Au nanoparticles, after assembly onto the microsphere surfaces, was essentially unchanged (14.0 ± 2.8 nm). The relative surface coverage of the SiO₂ microspheres with Au is dependent on the concentration of Au nanoparticles in solution and on the incubation time. Field-emission SEM (FE-SEM) was used to obtain high-resolution images of the microspheres before and after the Au coating procedure. As the surface coverage increased, the measured surface roughness of the SiO₂ microspheres also increased. Tapping mode atomic force microscopy (AFM) was used to measure the surface roughness of individual microspheres. The surface roughness of the microspheres and the chemical composition of the SAM correlate with differences in SAM stability. SAMs on microspheres with relatively higher surface roughness were less stable and were more susceptible to place-exchange reactions. Carboxylate-terminated monolayers are more stable than amine-terminated SAMs. A novel method for determining the relative amts. of exchange of fluorescently labeled alkanethiols between different monolayer-coated microspheres is reported. In this method, the transfer of fluorescently labeled alkanethiols composing SAMs on one set of Au-coated microspheres to nonlabeled SAMs on another set of Au-coated microspheres is monitored as a function of time using fluorescence microscopy. A collision-dependent mechanism influences the rate and amount of exchange of alkanethiol between microspheres. The stability and exchange properties of SAMs on Au-nanoparticle-coated microspheres are presented. REFERENCE COUNT: 41

L1 ANSWER 17 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:285586 CAPLUS

DOCUMENT NUMBER: 133:355118

TITLE: Preparation of avidin-labeled protein nanoparticles as carriers for biotinylated peptide nucleic acid

AUTHOR(S): Langer, K.; Coester, C.; Weber, C.; von Briesen, H.; Kreuter, J.

CORPORATE SOURCE: Institut für Pharmazeutische Technologie, Johann Wolfgang Goethe-Universität, Frankfurt am Main, Germany

SOURCE: European Journal of Pharmaceutics and Biopharmaceutics (2000), 49(3), 303-307

CODEN: EJPBEL; ISSN: 0939-6411

PUBLISHER: Elsevier Science Ireland Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The possibility of preparing protein nanoparticles followed by covalent linkage of avidin was investigated. Free sulfhydryl groups were introduced onto the surface of protein nanoparticles either by aldehyde quenching with cysteine or reaction of free amino groups with 2-iminothiolane. The number of primary amino groups and sulfhydryl groups on the surface of the resulting particles was quantified with site-specific reagents. Avidin was attached to the surface of the thiolated nanoparticles via a bifunctional spacer which reacted in a first step with amino groups of avidin and in a second step with the sulfhydryl groups introduced onto the surface of the nanoparticles. Biotinylated peptide nucleic acid (PNA) as a model compound for biotinylated drugs was effectively coupled to the nanoparticles by complex formation with the covalently attached avidin. Since the formation of the interaction between biotin and avidin is very rapid and stable a highly effective drug carrier system for biotinylated compds. such as PNAs was achieved. REFERENCE COUNT: 10

L1 ANSWER 18 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:176006 CAPLUS

DOCUMENT NUMBER: 132:202392

TITLE: "Fabrication of gas-sensing films based on nanoparticles grafted with electronically or chemically interacting organic molecules"

INVENTOR(S): *Perez, Henry; Armand, Franck; Pradeau, Jean-Paul*

PATENT ASSIGNEE(S): Commissariat a l'Energie Atomique, Fr.

SOURCE: PCT Int. Appl., 76 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: French

PATENT NO. KIND DATE APPLICATION NO. DATE

WO 2000014520 A1 20000316 WO 1999-FR2121 19990907

FR 2783051 A1 20000310 FR 1998-11196 19980908

FR 2783051 B1 20001110

EP 1112488 A1 20010704 EP 1999-941704 19990907

PRIORITY APPLN. INFO.: FR 1998-11196 A 19980908 WO 1999-FR2121 W 19990907

AB A sensing film for detection of a chemical species, that can interact electronically or chemical with the chemical species to be detected, is fabricated based on mineral nanoparticles, upon which organic mols. are deposited or grafted such that they form a ring or layer on the nanoparticles. Suitable nanoparticles are composed of at least one member selected from ensembles of Pt, Au, Ag, CdS, or TiO₂, which can be functionalized, reacted, hydrophobized, etc., with the organic mols. reacted with it. The organic mols., which can form the sensing film that interacts with the chemical species to be detected, consist of mols. selected from substituted and unsubstituted phthalocyanines, tetrapyrrolinephthalocyanines, thiophenes, oligomeric thiophenes, porphyrins, erythrosine derivs., crown ethers, aza-crown ethers, cryptophanes, cyclodextrins, and benzene derivs. These organic mols. are bound to the nanoparticle by such groups as thiolate, isonitrile, amino, trioctyl phosphate, pyridino, aldehyde, isocyanato, isothiocyanato, ester, or -COCl groups. The sensors were especially useful for detecting NO₂.

REFERENCE COUNT: 5

L1 ANSWER 19 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1999:57417 CAPLUS

DOCUMENT NUMBER: 130:201326

TITLE: Ligand-induced gold nanocrystal superlattice formation in colloidal solution

AUTHOR(S): Lin, X. M.; Sorensen, C. M.; Klabunde, K. J.

CORPORATE SOURCE: Condensed Matter Laboratory Department of Physics,
Kansas State University, Manhattan, KS, 66506, USA

SOURCE: Chemistry of Materials (1999), 11(2), 198-202

CODEN: CMATEX; ISSN: 0897-4756

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB An inverse micelle synthesis of narrow size-distributed, ligand-induced gold nanocrystal superlattices (NCSs) in colloidal solution was presented. Several ligands containing thiol, sulfide and amino functional groups were chosen to further modify the surface of the existing gold nanoparticles. Dodecanethiol was proven to be most effective in forming NCSs compare to other ligands. These ligands were chosen because the functional groups they contain have fairly good affinity for metal surface. It was found that certain ligands added to colloid induce a spontaneous and self-size-selective NCS formation. The gold NCS structures were directly synthesized in the colloid and their structure and size distribution were studied by TEM and UV-vis spectroscopy.

REFERENCE COUNT: 24

L1 ANSWER 21 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1996:610527 CAPLUS

DOCUMENT NUMBER: 125:310930

TITLE: Preparation and properties of surface-modified CdS nanoparticles immobilized on gold electrode substrates

AUTHOR(S): Miyake, Masahide; Nishizawa, Matsuhiko; Kuwabata, Susumu;
Yoneyama, Hiroshi

CORPORATE SOURCE: Faculty Engineering, Osaka University, Suita, 565, Japan

SOURCE: Proceedings - Electrochemical Society (1996), 96-8(Electrode Processes),
315-321

CODEN: PESODO; ISSN: 0161-6374

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB CdS nanoparticles covered with 2-aminoethanethiol and 2-mercaptoethane thiol monolayer were prepared using an well-established technique of the use of inverse micelles, and were immobilized onto Au electrode substrates covered with self-assembled monolayer of 3,3'-dithio(succinimidylpropionate) through the amide bonding. Distribution profiles of the size of the surface-modified CdS nanoparticles before and after the immobilization onto Au electrode substrates were obtained by observations

using a transmission electron microscope. Attempts were made to determine the bandgap of the immobilized CdS nanoparticles.

L2 ANSWER 1 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2004:137429 CAPLUS

TITLE: Thiol ligands for FePt nanoparticles

AUTHOR(S): Thode, Christopher; Sun, Xiangcheng; Earl, Ada; Nikles, David

CORPORATE SOURCE: Dep. Chem., Univ. Alabama, Tuscaloosa, AL, USA

SOURCE: Abstracts, 55th Southeast Regional Meeting of the American Chemical Society, Atlanta, GA, United States, November 16-19, 2003 (2003), 985. American Chemical Society: Washington, D. C.

CODEN: 69EUCH

DOCUMENT TYPE: Conference; Meeting Abstract

LANGUAGE: English

AB FePt nanoparticles were prepared by the polyol reduction of platinum(II) acetylacetonate and iron(III) acetylacetonate in the presence of oleyl amine and oleic acid surfactants. The oleyl amine and oleic acid ligands were replaced by 1-dodecane thiol by dispersing the particles in a hexane solution containing 1-dodecane thiol. X-ray photoelectron spectra showed a peak near 164 eV, sulfur (2p), confirming the presence of the thiol ligand.

L2 ANSWER 2 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2004:80257 CAPLUS

DOCUMENT NUMBER: 140:134508

TITLE: Thiol terminated monodisperse ethylene oxide oligomer capped gold nanoclusters

INVENTOR(S): Foos, Edward E.; Snow, Arthur W.

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 8 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

PATENT NO. KIND DATE APPLICATION NO. DATE

US 2004018633 A1 20040129 US 2002-206431 20020729

PRIORITY APPLN. INFO.: US 2002-206431 20020729

AB This invention describes a thiol terminated ethylene oxide oligomer and the method of substituting the oligomer onto a Au nanocluster surface using a thiol-exchange reaction to form a charge-neutral, nonionizable, H₂O soluble, ethylene oxide protected Au nanocluster. The thiol terminated ethylene oxide oligomer has the formula CH₃(OCH₂CH₂)_xSH where x varies from 1 to 10. Also disclosed is the related method of making the thiol terminated ethylene oxide oligomer.

L2 ANSWER 3 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:713251 CAPLUS

DOCUMENT NUMBER: 139:355345

TITLE: Core size effects on electrodeposition of gold nanoparticles attached with biferrocene derivatives

AUTHOR(S): Yamada, M.; Nishihara, H.

CORPORATE SOURCE: Department of Chemistry, School of Science, The University of Tokyo, Tokyo, 113-0033, Japan

SOURCE: European Physical Journal D: Atomic, Molecular and Optical Physics (2003), 24(1-3), 257-260

CODEN: EPJDF6; ISSN: 1434-6060

PUBLISHER: EDP Sciences

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Biferrocene-modified gold nanoparticles (Aun-BFc) comprising 1.7, 2.2 and 2.9 nm in average core diameter, d, were synthesized by a substitution reaction of octyl thiolate-covered nanoparticles with biferrocene-terminated alkanethiol, 1-(9-thiononyl-1-one)-1',1''-biferrocene (BFcS). All sizes of Aun-BFc undergo two-step oxidation reactions in 0.1 mol dm⁻³ Bu₄NClO₄-CH₂Cl₂ and consecutive potential scans including the second oxidation process lead to the formation of an adhesive redox-active gold nanoparticle film on an electrode. The thickness of the Aun-BFc film is controllable by the number of potential scans. The scanning tunneling microscope images reveal that the Aun-BFc (d = 2.9 nm) film forms many domains of the assembled Aun-BFc, especially the particles are isotropically assembled in line. REFERENCE COUNT: 28

L2 ANSWER 4 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:590701 CAPLUS

DOCUMENT NUMBER: 139:146206

TITLE: Bioconjugate-nanoparticle probes

INVENTOR(S): Garimella, Viswanadham; Storhoff, James J.

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 27 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

PATENT NO. KIND DATE APPLICATION NO. DATE

US 2003143598 A1 20030731 US 2002-291291 20021108

WO 2003081202 A2 20031002 WO 2002-US35888 20021108

PRIORITY APPLN. INFO.: US 2001-348239P P 20011109

AB The invention provides nanoparticle-bioconjugate probes that are useful for detecting target analytes such as nucleic acids. The probes of the invention are stable towards heat and resistant to displacement by thiol containing compds. such as DTT (dithiothreitol). Epiandrosterone disulfide derivative-modified oligonucleotide probes were prepared and used to bind to a target sequence. The probes had increased stability in the presence of DTT at elevated temperature

L2 ANSWER 5 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:181380 CAPLUS

TITLE: Functionalized gold particles by ligand-exchange reactions: Influence of size on mechanism, reactivity, and properties

AUTHOR(S): Woehrle, Gerd H.; Hutchison, James E.

CORPORATE SOURCE: Department of Chemistry and Materials Science Institute, University of Oregon, Eugene, OR, 97403, USA

SOURCE: Abstracts of Papers, 225th ACS National Meeting, New Orleans, LA, United States, March 23-27, 2003 (2003), COLL-277. American Chemical Society: Washington, D. C.

CODEN: 69DSA4

DOCUMENT TYPE: Conference; Meeting Abstract

LANGUAGE: English

AB Peripheral functionalization of ligand-stabilized gold nanoparticles is a key requirement for the use of these materials in nanoelectronic, optical and biol. applications. We established a general and convenient method that employs a ligand exchange reaction of phosphine-stabilized nanoparticle precursors with a wide variety of <SYM119>-functionalized alkanethiols. Ligand exchange has been demonstrated to prepare <SYM119>-functionalized nanoparticles with core diams. of dCORE=0.8 nm and dCORE=1.5 nm. Here, we compare the mechanism for the ligand exchange reaction in these two systems. We found that the subnanometer particles are much less reactive towards ligand exchange than the larger analogs. Moreover, anal. of the reaction products revealed that the mechanism for replacement of the phosphine ligands by thiols depends on the core size. These studies provide insight into the size-dependent reactivity of the ligand exchange reaction. Size-dependence of the electronic and optical properties of nanoparticles will also be discussed.

L2 ANSWER 6 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:671113 CAPLUS

DOCUMENT NUMBER: 137:361889

TITLE: Ligand Exchange Reactions Yield Subnanometer, Thiol-Stabilized Gold Particles with Defined Optical Transitions

AUTHOR(S): Woehrle, Gerd H.; Warner, Marvin G.; Hutchison, James E.

CORPORATE SOURCE: Department of Chemistry, University of Oregon, Eugene, OR, 97403-1253, USA

SOURCE: Journal of Physical Chemistry B (2002), 106(39), 9979-9981

CODEN: JPCBFK; ISSN: 1520-6106

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A convenient preparation is reported for a series of functionalized, thiol-stabilized gold particles with subnanometer core diams. (dCORE = 0.8 ± 0.2 nm). The preparation produces previously inaccessible materials through ligand exchange reactions of a phosphine-stabilized precursor, Au11(PPh3)8Cl3, with <SYM119>-functionalized alkanethiols. Convenient access to these new materials is a prerequisite to the detailed study of the electronic and optical properties of subnanometer particles and the investigation of the utility of these building blocks in nanoscale devices. Preliminary

investigations of the optical properties of these new materials by UV-vis spectroscopy revealed that the particles have defined optical transitions. These results confirm the presence of discrete energy levels in the electronic structure of these materials that might be expected due to quantum size effects. Initial studies also suggest that the optical properties depend on the nature of the stabilizing ligand shell. The ligand exchange method described is applicable for a diverse family of alkanethiols to produce both organic- and water-soluble particles that show increased stability over the phosphine-stabilized precursor. Extensive characterization indicates that the thiol-stabilized exchange products have well-defined core sizes and dispersities.

REFERENCE COUNT: 38

L2 ANSWER 7 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:378100 CAPLUS

DOCUMENT NUMBER: 137:38188

TITLE: Dynamics and Extent of Ligand Exchange Depend on Electronic Charge of Metal Nanoparticles

AUTHOR(S): Song, Yang; Murray, Royce W.

CORPORATE SOURCE: Kenan Laboratories of Chemistry, University of North Carolina, Chapel Hill, NC, 27599-3290, USA

SOURCE: Journal of the American Chemical Society (2002), 124(24), 7096-7102

CODEN: JACSAT; ISSN: 0002-7863

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Both the rate and extent of ligand place exchange reactions between the hexanethiolate monolayer of Au140 monolayer protected clusters (C6 MPCs) and dissolved 6-mercapto-1-hexanol thiol (HOC6SH) increase with increasing pos. electronic charge on the Au cluster core. The rate constant of the ligand place exchange, taken at the early stage of the exchange, is increased by ca. 2-fold for reaction of +3 charged Au140 cores as compared to neutral ones. The initially exchanged ligands are thought to reside mainly on edge and vertex sites of the Au140 core, where the lability of the slightly more ionic Au-S bonds there becomes further enhanced by removing electrons from the core. The reactions slow markedly after 35-50% of the original ligands have been replaced, continuing at a much slower pace for some time to reach an apparent reaction equilibrium. On +2 charged Au140 cores, 85% of the C6 ligands have been exchanged with HOC6H12SH after 20 h. The slower phase of the reaction includes exchange of thiolate ligands on terrace lattice sites most of which-owing to the small sizes of the nanoparticle's Au(111) faces-are no more than one Au atom row removed from the nanoparticle edge sites. This slower exchange, the extent of which is also enhanced by pos. charging the core, occurs either by intramol. place exchange with edge sites that subsequently place-exchange with solution thiol or by direct place-exchange with solution thiol. Acid-base studies show that thiolate is more reactive in place exchange reactions than the corresponding thiol. REFERENCE COUNT: 28

L2 ANSWER 8 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:291131 CAPLUS

DOCUMENT NUMBER: 137:24706

TITLE: Thiol-Terminated Di-, Tri-, and Tetraethylene Oxide Functionalized Gold Nanoparticles: A Water-Soluble, Charge-Neutral Cluster

AUTHOR(S): Foos, Edward E.; Snow, Arthur W.; Twigg, Mark E.; Ancona, Mario G.

CORPORATE SOURCE: Naval Research Laboratory, Washington, DC, 20375, USA

SOURCE: Chemistry of Materials (2002), 14(5), 2401-2408

CODEN: CMATEX; ISSN: 0897-4756

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A series of gold nanoclusters stabilized by ligands containing short ethylene oxide oligomers of fixed length were prepared and characterized. The thiols $\text{CH}_3(\text{OCH}_2\text{CH}_2)_n\text{SH}$ (where $n = 2, 3$, and 4) were substituted onto the surface of 1.8-nm hexanethiol-capped gold clusters by a thiol-exchange reaction, and the resulting nanoclusters were characterized by NMR, FTIR, and UV/vis spectroscopies; TGA; and TEM anal. A degree of ligand exchange greater than 99% was achieved, and the gold core diameter remained unchanged in the final material. Of particular interest, the cluster with $n = 2$ was water-insol., whereas those with $n = 3$ or 4 were water-soluble. The thin-film elec. conductivities of these clusters were compared with those of alkanethiol-capped clusters of similar chain lengths and found to be roughly 1 order of magnitude greater. In a chemical vapor sensor configuration, this series of clusters displayed strong elec. responses that showed a correlation between the length of the ethylene oxide ligand and the polarity of the vapor. REFERENCE COUNT: 41

L2 ANSWER 9 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:768628 CAPLUS

DOCUMENT NUMBER: 136:91389

TITLE: Gold nanoparticles containing redox-active supramolecular dendrons that recognize H_2PO_4^-

AUTHOR(S): Daniel, Marie-Christine; Ruiz, Jaime; Nlate, Sylvain; Palumbo, Jennifer; Blais, Jean-Claude; Astruc, Didier

CORPORATE SOURCE: Groupe de Chimie Supramoléculaire des Métaux de Transition, LCOO, UMR CNRS 5802, Talence, 33405, Fr.

SOURCE: Chemical Communications (Cambridge, United Kingdom) (2001), (19), 2000-2001

CODEN: CHCOFS; ISSN: 1359-7345

PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Gold (Au) nanoparticles were functionalized with thiol dendrons containing three redox active amidoferrocenyl or silylferrocenyl units $[\text{SCH}_2\text{C}_6\text{H}_4-4-\text{CH}_2\text{OC}_6\text{H}_4-4-\text{C}(\text{CH}_2\text{CH}_2\text{CH}_2\text{SiMe}_2\text{Fc}')_3, \text{Fc}' = \text{C}_5\text{H}_4\text{FeCp}, \text{NHC}(\text{O})\text{C}_5\text{H}_4\text{FeCp}]$; using cyclic voltammetry, these dendronized Au nanoparticles recognize H_2PO_4^- . REFERENCE COUNT: 34

L2 ANSWER 10 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:199645 CAPLUS

TITLE: Scanning probe lithography to form nano-scale patterned surfaces

AUTHOR(S): Fuierer, Ryan

CORPORATE SOURCE: Department of Chemistry, North Carolina State University, Raleigh, NC, 27695, USA

SOURCE: Abstracts of Papers - American Chemical Society (2001), 221st, COLL-388

CODEN: ACSRAL; ISSN: 0065-7727

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal; Meeting Abstract

LANGUAGE: English

AB Scanning Tunneling Microscopy is employed to produce chemical well-defined patterns in which dodecanethiol Self Assembled Monolayers are selectively replaced in-situ, with various functionalized thiolates. Lithog. yields line widths of ca. 10 nm resolution, and complex bottom-up nanostructures can be routinely fabricated. Electroactive functionalized thiolates exhibit imaging bias dependent apparent height contrasts due to a mechanism thought to be resonant tunneling. Devices for Au nanoparticle placement/manipulation and the current - voltage properties of these systems are investigated.

L2 ANSWER 11 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:795891 CAPLUS

TITLE: Electrochemical studies of nanoparticle self-assembled monolayers.

AUTHOR(S): Chen, Shaowei

CORPORATE SOURCE: Department of Chemistry, Southern Illinois University, Carbonale, IL, 62901-4409, USA

SOURCE: Abstracts of Papers - American Chemical Society (2000), 220th, INOR-444

CODEN: ACSRAL; ISSN: 0065-7727 PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal; Meeting Abstract

LANGUAGE: English

AB Self-assembling of monolayer-protected nanoclusters onto a gold electrode surface was reported. The particles were surface-active with multiple copies of peripheral thiol groups that resulted from an exchange reaction with alkanedithiols. Excessive dithiol and displaced thiol ligands were removed from the cluster exchange solution via liquid extraction using a hexane-methanol system. The self-assembling process appeared to be rather fast, similar to that for monomeric alkanethiols. The resulting particle adlayers exhibited discrete electron-transfer features that were ascribed to the quantized capacitance charging to the particle double layers. The electrode double-layer capacitance, evaluated from impedance measurements, also showed a modulation with electrode potentials. Consistent electron-transfer rate consts. were obtained from the Laviron evaluation as well as from the impedance measurements. The electron-charging behaviors were also quite visible in aqueous media when the interparticle "void" space was filled up with low-dielec. organic adlayers or when the electrode diffuse layer was extended beyond the surface-bound particles by diluting the supporting electrolyte. Tech. implications of these particle assemblies were also discussed.

L2 ANSWER 12 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:16513 CAPLUS

DOCUMENT NUMBER: 132:129141

TITLE: Self-Assembling of Monolayer-Protected Gold Nanoparticles

AUTHOR(S): Chen, Shaowei

CORPORATE SOURCE: Department of Chemistry and Biochemistry, Southern Illinois University, Carbondale, IL, 62901-4409, USA

SOURCE: Journal of Physical Chemistry B (2000), 104(4), 663-667

CODEN: JPCBFK; ISSN: 1089-5647

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Self-assembling of monolayer-protected gold nanoclusters onto a gold electrode surface was reported. The particles were surface-active with multiple copies of peripheral thiol groups that resulted from an exchange reaction with alkanedithiols. Excessive dithiol and displaced thiol ligands were removed from the cluster exchange solution via liquid extraction using a hexane-methanol system. The self-assembling process appeared to be rather fast, similar to that for simple alkanethiols. The resulting particle adlayers exhibited discrete electron-transfer features that were ascribed to the quantized capacitance charging to the particle double layers. The electrode double-layer capacitance, evaluated from impedance measurements, also showed a modulation with electrode potentials. Consistent electron-transfer rate consts. were obtained from the Laviron evaluation as well as from the impedance measurements. The electron-charging behaviors were also quite visible in aqueous media when the interparticle "void" space was filled up with low-dielec. organic adlayers. Tech. implications of these particle assemblies were also discussed. REFERENCE COUNT: 39

L2 ANSWER 13 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1997:747572 CAPLUS

DOCUMENT NUMBER: 128:96722

TITLE: Thiolation of maghemite nanoparticles by dimercaptosuccinic acid

AUTHOR(S): Fauconnier, N.; Pons, J. N.; Roger, J.; Bee, A.

CORPORATE SOURCE: Liquides Ioniques et Interfaces Chargees (URA 430), Colloides Magnetiques, Case 63, Universite Pierre et Marie Curie, Paris, 75252, Fr.

SOURCE: Journal of Colloid and Interface Science (1997), 194(2), 427-433

CODEN: JCISA5; ISSN: 0021-9797

PUBLISHER: Academic Press

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Magnetic particle-effector conjugates are widely used in vitro for cell sorting in various pathologies. The coupling between the particles and the effectors being realized through S-S bridges, the particles must first be thiolated before the coupling. In this work, the synthesis, in aqueous medium, of nanoparticles of maghemite thiolated by dimercaptosuccinic acid is described. The superficial complexation by a thiol-containing ligand induces a reductive dissoln. of the oxide and leads to the adsorption of polydisulfide species coming from the oxidation of the ligand. Adsorption and redox

reactions being strongly correlated to the composition of the medium, the amount of adsorbed ligand and the quantity of iron(II) released into the medium have been simultaneously determined, at various pH, for different concns. of ligand added. The charge of the particles is drastically modified in the presence of a chelating agent; as a consequence, the colloidal stability is greatly affected and so the flocculation ranges of the complexed particles have been established for different pH. When the quantity of ligand added is sufficient (0.05 mol/mol of iron), the ferrofluid based on thiolated maghemite particles is stable between pH 3 and 11 and can be used for biomedical applications. REFERENCE COUNT: 27

L3 ANSWER 2 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:946175 CAPLUS

DOCUMENT NUMBER: 140:86575

TITLE: A Nanoscale Optical Biosensor: The Long Range Distance Dependence of the Localized Surface Plasmon Resonance of Noble Metal Nanoparticles

AUTHOR: Haes, Amanda J.; Zou, Shengli; Schatz, George C.; Van Duyne, Richard P.

CORPORATE SOURCE: Department of Chemistry, Northwestern University, Evanston, IL, 60208-3113, USA

SOURCE: Journal of Physical Chemistry B (2004), 108(1), 109-116

CODEN: JPCBFK; ISSN: 1520-6106

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The elucidation of the long range distance dependence of the localized surface plasmon resonance (LSPR) of surface-confined noble metal nanoparticles is the aim of this work. It was suspected that the linear distance dependence found in Me(CH₂)_xSH self-assembled monolayer (SAM) formation was the thin shell limit of a longer range, nonlinear dependence. To verify this, multilayer SAM shells based on the interaction of HOOC(CH₂)₁₀SH and Cu²⁺ were assembled onto surface-confined noble metal nanoparticles and were monitored using UV-visible spectroscopy. Measurement of the LSPR extinction peak shift vs. number of layers and adsorbate thickness is nonlinear and has a sensing range that is dependent on the composition, shape, in-plane width, and out-of-plane height of the nanoparticles. Theor. calcns. based on an accurate electrodynamics description of the metal nanoparticle plus surrounding layered material indicate plasmon resonance wavelength shifts that are in excellent agreement with the measurements. The calcns. show that the sensing range is determined by falloff of the average induced elec. field around the nanoparticle. This detailed set of expts. coupled with an excellent theory vs. experiment comparison prove that the sensing capabilities of noble metal nanoparticles can be size tuned to match the dimensions of biol. and chemical analytes by adjusting the aforementioned properties. The optimization of the LSPR nanosensor for a specific analyte will significantly improve an already sensitive nanoparticle-based sensor. REFERENCE COUNT: 57

L3 ANSWER 3 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:930858 CAPLUS

DOCUMENT NUMBER: 139:377585

TITLE: Biosensor and method
INVENTOR(S): Quinn, John G.; Elkind, Jerry
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 18 pp.

CODEN: USXXCO

PATENT NO. KIND DATE APPLICATION NO. DATE

US 2003219822 A1 20031127 US 2002-152745 20020522

PRIORITY APPLN. INFO.: US 2002-152745 20020522

AB Surface plasmon resonance (SPR) sensor biointerface with a rigid thiol linker layer and/or interaction layer ligand loading with reversible collapse and/or iron oxide nanoparticle sensor response amplification.

L3 ANSWER 4 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:930832 CAPLUS

DOCUMENT NUMBER: 139:377583

TITLE: Biosensor and method

INVENTOR(S): Quinn, John G.; Elkind, Jerry

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 18 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

PATENT NO. KIND DATE APPLICATION NO. DATE

US 2003219753 A1 20031127 US 2002-152760 20020522

PRIORITY APPLN. INFO.: US 2002-152760 20020522

AB Surface plasmon resonance (SPR) sensor biointerface with a rigid thiol linker layer and/or interaction layer ligand loading with reversible collapse and/or iron oxide nanoparticle sensor response amplification.

L3 ANSWER 5 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:874883 CAPLUS

DOCUMENT NUMBER: 139:359849

TITLE: Nucleic acid detection based on oligonucleotide-nanoparticle conjugates

INVENTOR(S): Park, So-Jung; Taton, Thomas Andrew; Mirkin, Chad A.

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 206 pp., Cont.-in-part of U.S. Ser. No. 8,978.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 16

PATENT NO. KIND DATE APPLICATION NO. DATE

US 2003207296 A1 20031106 US 2002-266983 20021008

WO 9804740 A1 19980205 WO 1997-US12783 19970721

US 6361944 B1 20020326 US 1999-344667 19990625
US 6506564 B1 20030114 US 2000-603830 20000626
US 2002155442 A1 20021024 US 2001-760500 20010112
US 2003022169 A1 20030130 US 2001-820279 20010328
US 2002172953 A1 20021121 US 2001-927777 20010810
US 2003087242 A1 20030508 US 2001-8978 20011207

PRIORITY APPLN. INFO.: US 1996-31809P P 19960729

AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids. Thus, oligonucleotide arrays on microscope slides were hybridized with capture oligonucleotides and two different oligonucleotides each attached to a gold nanoparticle of different diameter (50 or 100 nm). The slide was illuminated in the plane of the slide by a fiber optic illuminator. Wherever probes were attached to the surface, bright spots of light on a dark background were visible. Green spots were visible where the 50 nm nanoparticles were bound, orange light where the 100 nm nanoparticles were bound. In another embodiment of the invention, microelectrodes were created on Si chips and oligonucleotides were immobilized between the electrodes. It was found that a salt-based stringency wash could be used in place of the usual thermal stringency wash to differentiate binding between mismatched and matched oligonucleotide-Au nanoparticle probes.

L3 ANSWER 8 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:319346 CAPLUS

DOCUMENT NUMBER: 138:333988

TITLE: Particles by facile ligand exchange reactions

INVENTOR(S): Hutchison, James E.

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 39 pp., Cont.-in-part of U.S.

Ser. No. 13,334.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

PATENT NO. KIND DATE APPLICATION NO. DATE

US 2003077625 A1 20030424 US 2002-186297 20020627

US 2002146742 A1 20021010 US 2001-13334 20011105

WO 2004002508 A1 20040108 WO 2003-US20500 20030627

PRIORITY APPLN. INFO.: US 1997-47804P P 19970527

AB A method for forming arrays of metal, alloy, semiconductor or magnetic nanoparticles is described. An embodiment of the method comprises placing a scaffold on a substrate, the scaffold comprising, for example, polynucleotides and/or polypeptides, and coupling the nanoparticles to the scaffold. Methods of producing arrays in predetd. patterns and electronic devices that incorporate such patterned arrays are also described.

L3 ANSWER 9 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:235412 CAPLUS

DOCUMENT NUMBER: 138.231123

TITLE: *Colloidal particles used in sensing arrays.*

INVENTOR(S): *Lewis, Nathan S.; Doleman, Brett J.; Briglin, Shawn; Severin, Erik J.*

PATENT ASSIGNEE(S): *California Institute of Technology, USA*

SOURCE: *U.S., 24 pp., Cont.-in-part of U.S. Ser. No. 986,500.*

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 7

PATENT INFORMATION:

PATENT NO. KIND DATE APPLICATION NO. DATE

US 6537498 B1 20030325 US 1999-328871 19990608

US 5571401 A 19961105 US 1995-410809 19950327

EP 950895 A2 19991020 EP 1999-202573 19960326

EP 950895 A3 20020102

US 5698089 A 19971216 US 1996-689227 19960807

US 6010616 A 20000104 US 1997-986500 19971208

US 6013229 A 20000111 US 1998-95376 19980610

US 5891398 A 19990406 US 1998-154604 19980916

US 6093308 A 20000725 US 1999-258713 19990226

US 6331244 B1 20011218 US 2000-478680 20000106

US 2003159927 A1 20030828 US 2002-266550 20021007

US 2004033165 A1 20040219 US 2003-409449 20030407

PRIORITY APPLN. INFO.: US 1995-410809 A1 19950327

US 1996-689227 A1 19960807 US 1997-986500 A2 19971208

US 1998-88630P P 19980609 US 1999-118833P P 19990205 EP 1996-910563

A3 19960326 US 1996-696128 A1 19960814 US 1997-949730 A1 19971014

US 1998-6142 A1 19980114 US 1998-209914 A1 19981211 US 1999-258713

A1 19990226 US 1999-328871 A1 19990608 US 1999-369507 B1 19990806

AB Chemical sensors for detecting analytes in fluids comprising a plurality of alternating nonconductive regions (comprising a nonconductive material) and conductive regions (comprising a conductive material). In preferred embodiments, the conducting region comprises a nanoparticle. Variability in chemical sensitivity from sensor to sensor is provided by qual. or quant. varying the composition of the conductive and/or nonconductive regions. An electronic nose for detecting an analyte in a fluid may be

constructed by using such arrays in conjunction with an elec. measuring device elec. connected to the conductive elements of each sensor. REFERENCE COUNT: 35

L3 ANSWER 10 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:97590 CAPLUS

DOCUMENT NUMBER: 138:146848

TITLE: Low resolution surface enhanced Raman spectroscopy on sol-gel substrates

INVENTOR(S): Premasiri, W. Ranjith; Clarke, Richard H.; Womble, M.

Edward

PATENT ASSIGNEE(S): Trustees of Boston University, USA

SOURCE: PCT Int. Appl., 30 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

PATENT NO. KIND DATE APPLICATION NO. DATE

WO 2003010511 A2 20030206 WO 2002-US23459 20020723

WO 2003010511 A3 20030508

PRIORITY APPLN. INFO.: US 2001-307299P P 20010723

AB The invention is directed to a method of making and using a porous solid matrix for trapping metal nanoparticles for use in detection, identification and quantification of trace levels of water contaminants using surface enhanced Raman scattering (SERS). The metal nanoparticles are polydispersed in the porous solid matrix, sufficiently separated to prevent conduction, in creating a broad area of excited electrons in response to applied radiation. In one aspect, the metal nanoparticles may be derived from gold, silver or platinum. In another aspect, the porous solid matrix is a sol-gel embedded with a polydispersion of metal for use in SERS detection. This metal nanoparticle substrate can be used on-site, is highly sensitive and easy to use for an immediate and accurate result.

L3 ANSWER 11 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:956936 CAPLUS

DOCUMENT NUMBER: 138:310985

TITLE: Unusual excitation intensity dependence of fluorescence of CdTe nanoparticles

AUTHOR(S): Wu, Fanxin; Lewis, James W.; Kliger, David S.; Zhang, Jin Z.

CORPORATE SOURCE: Department of Chemistry and Biochemistry, University of California, Santa Cruz, CA, 95064, USA

SOURCE: Journal of Chemical Physics (2003), 118(1), 12-16

CODEN: JCPSA6; ISSN: 0021-9606

PUBLISHER: American Institute of Physics

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The fluorescence of thiol-capped CdTe nanoparticles were measured using nanosecond laser spectroscopy. While the bandedge fluorescence intensity of CdTe nanoparticles increases linearly with excitation intensity at low intensities, an unusual decrease of fluorescence intensity with increasing excitation intensity was observed at higher intensities. This unusual excitation intensity dependence was tentatively explained by nonlinear exciton-exciton annihilation or Auger photoionization effect that

takes place within the 7 ns excitation laser pulse. But the fluorescence intensity of CdS nanoparticles increases monotonically with excitation intensity in the same intensity range studied. CdTe nanoparticles show stronger nonlinear optical properties due possibly to stronger quantum confinement effect and could be potentially useful for nonlinear optical applications. REFERENCE COUNT: 19

L3 ANSWER 12 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:933610 CAPLUS

DOCUMENT NUMBER: 138:115645

TITLE: Fabrication of nanometer-spaced electrodes using gold nanoparticles

AUTHOR(S): Khondaker, Saiful I.; Yao, Zhen

CORPORATE SOURCE: Center for Nano- and Molecular Science and Technology, Texas Materials Institute, Department of Physics, The

University of Texas at Austin, Austin, TX, 78712, USA

SOURCE: Applied Physics Letters (2002), 81(24), 4613-4615

CODEN: APPLAB; ISSN: 0003-6951

PUBLISHER: American Institute of Physics

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A simple and highly reproducible technique is demonstrated for the fabrication of metallic electrodes with nanometer separation. Com. available bare gold colloidal nanoparticles are first trapped between prefabricated large-separation electrodes to form a low-resistance bridge by an ac elec. field. A large dc voltage is then applied to break the bridge via electromigration at room temperature, which consistently produces gaps in the sub-10 nm range. The technique is readily applied to prefabricated electrodes with separation up to 1 μ m, which can be defined using optical lithog. The simple fabrication scheme will facilitate electronic transport studies of individual nanostructures made by chemical synthesis. As an example, measurement of a thiol-coated gold nanoparticle showing a clear Coulomb staircase is presented.

REFERENCE COUNT: 17

L3 ANSWER 13 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:858272 CAPLUS

DOCUMENT NUMBER: 138:115629

TITLE: Fabrication of nanometer-spaced electrodes using gold nanoparticles

AUTHOR(S): Khondaker, Saiful I.; Yao, Zhen

CORPORATE SOURCE: Department of Physics, Texas Materials Institute, and Center for Nano- and Molecular Science and Technology, The University of Texas at Austin, Austin, TX, 78712, USA

SOURCE: Los Alamos National Laboratory, Preprint Archive, Condensed Matter (2002) 1-5, arXiv:cond-mat/0211213, 11 Nov 2002

CODEN: LNCMFR

URL: <http://xxx.lanl.gov/pdf/cond-mat/0211213>

PUBLISHER: Los Alamos National Laboratory

DOCUMENT TYPE: Preprint

LANGUAGE: English

AB A simple and highly reproducible technique is demonstrated for the fabrication of metallic electrodes with nanometer separation. Com. available bare gold colloidal nanoparticles are first trapped between prefabricated large-separation electrodes to form a low-resistance bridge by an ac elec. field. A large dc voltage is then applied to break the bridge via electromigration at room temperature, which consistently produces gaps in the sub-10 nm range. The technique is readily applied to prefabricated electrodes with separation up to 1 μm , which can be defined using optical lithog. The simple fabrication scheme will facilitate electronic transport studies of individual nanostructures made by chemical synthesis. As an example, measurement of a thiol-coated gold nanoparticle showing a clear Coulomb staircase is presented.

REFERENCE COUNT: 18

L3 ANSWER 14 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:781863 CAPLUS

DOCUMENT NUMBER: 138:161453

TITLE: Electrical measurements of a dithiolated electronic molecule via conducting atomic force microscopy

AUTHOR(S): Rawlett, Adam M.; Hopson, Theresa J.; Nagahara, Larry A.; Tsui, Raymond K.; Ramachandran, Ganesh K.; Lindsay, Stuart M.

CORPORATE SOURCE: Motorola Labs, Physical Sciences Research Laboratories, Tempe, AZ, 85284, USA

SOURCE: Applied Physics Letters (2002), 81(16), 3043-3045

CODEN: APPLAB; ISSN: 0003-6951

PUBLISHER: American Institute of Physics

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The authors describe a method of measuring the elec. properties of a mol. via conducting atomic force microscopy (AFM). A dithiolated mol. is chemically inserted into defect sites in an insulating self-assembled monolayer formed on an epitaxial Au substrate and the top thiol terminus of the mol. is reacted with a Au nanoparticle. A Au-coated AFM probe was used to contact the mol. through the nanoparticle, thus elec. data can be obtained. The authors report preliminary transport measurements of two test mols. The authors' data shows qual. agreement with previously published results for similar mols. deposited in a nanopore containing approx. a thousand mols. The measured neg. differential resistance is not an intermol. phenomenon. REFERENCE COUNT: 15

L3 ANSWER 15 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:743437 CAPLUS

DOCUMENT NUMBER: 137:375757

TITLE: New Approach to the Assembly of Gold Nanoparticles: Formation of Stable Gold Nanoparticle Ensemble with Chainlike Structures by Chemical Oxidation in Solution

AUTHOR(S): Wang, Tongxin; Zhang, Deqing; Xu, Wei; Li, Shuhong; Zhu, Daoben

CORPORATE SOURCE: Organic Solids Laboratory Center for Molecular Sciences, Institute of Chemistry, Chinese Academy of Sciences, Beijing, 100080, Peop. Rep. China

SOURCE: Langmuir (2002), 18(22), 8655-8659

CODEN: LANGD5; ISSN: 0743-7463
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB By reducing the pyrrole contents on their surfaces, gold nanoparticles (capped by alkanethiolates and thiolates with pyrrole units) were cross-linked covalently by chemical oxidation into a stable nanoparticle ensemble with chainlike structures. This new and convenient assembly method for gold nanoparticles may be also applied to other functional nanoparticles (e.g., CdS, "core-shell" Co/Pt, and Fe/Au).

REFERENCE COUNT: 49

L3 ANSWER 16 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:449926 CAPLUS

DOCUMENT NUMBER: 137:29003

TITLE: Nanoparticles having oligonucleotides attached for hybridization detection of nucleic acids

INVENTOR(S): Mirkin, Chad A.; Letsinger, Robert L.; Mucic, Robert C.; Storhoff, James J.; Elghanian, Robert; Taton, Thomas Andrew; Garimella, Viswanadham; Li, Zhi; Park, So-Jung

PATENT ASSIGNEE(S): Nanosphere, Inc., USA

SOURCE: PCT Int. Appl., 442 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

PATENT NO. KIND DATE APPLICATION NO. DATE

WO 2002046472 A2 20020613 WO 2001-US46418 20011207

WO 2002046472 A3 20030904

US 2002155442 A1 20021024 US 2001-760500 20010112

US 2003022169 A1 20030130 US 2001-820279 20010328

US 2002172953 A1 20021121 US 2001-927777 20010810

AU 2002030593 A5 20020618 AU 2002-30593 20011207

EP 1356109 A2 20031029 EP 2001-990826 20011207

PRIORITY APPLN. INFO.: US 2000-254392P P 20001208

US 1996-31809P P 19960729 WO 1997-US12783 A2 19970721

AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compns. and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. The invention shows that it is

important to achieve a balance between oligonucleotide coverage high enough to stabilize the nanoparticles to which they are attached, yet low enough so that a high percentage of the strands are accessible for hybridization with oligonucleotides in solution. This is achieved by adjusting salt conditions during oligonucleotide attachment to the nanoparticles to gain high oligonucleotide surface coverages, oligonucleotide spacer segments to reduce electrosteric interactions, and coadsorbed diluent strands to reproducibly the average number of hybridization events for each particle. Also, the nature of the tether (spacer) sequence influences the number of oligonucleotide strands loaded onto gold nanoparticles. Gold nanoparticle-oligonucleotide conjugates using a cyclic disulfide linker serve as effective probes for detecting specific oligonucleotide sequences, and exhibit much greater stability toward dithiothreitol than corresponding conjugates prepared with conventional mercaptohexyl group or an acyclic disulfide unit. A DNA array imaging technique based on scattered light from larger oligonucleotide-functionalized nanoparticles provides the opportunity for sensitive, ultrasensitive, multicolor labeling of DNA arrays. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

L3 ANSWER 19 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:688185 CAPLUS

DOCUMENT NUMBER: 136:257885

TITLE: Magnetic nanosensors for the detection of oligonucleotide sequences

AUTHOR(S): Josephson, Lee; Perez, J. Manuel; Weissleder, Ralph

CORPORATE SOURCE: MGH Center For Molecular Imaging Research, Harvard Medical School, Boston, MA, 02129, USA

SOURCE: Angewandte Chemie, International Edition (2001), 40(17), 3204-3206

CODEN: ACIEF5; ISSN: 1433-7851

PUBLISHER: Wiley-VCH Verlag GmbH

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A novel magnetic sensor technol. was used as an alternative method for detecting oligonucleotide sequences. The starting material consisted of monodispersed, fluid phase nanoparticles containing an icosahedral core of superparamagnetic, crystalline Fe₂O₃/Fe₃O₄, caged by epichlorhydrin cross-linked dextran and functionalized with amine groups (CLIO-NH₂). Mixts. of (CLIO-(SS-(CH₂)₆-CGC-ATT-CAG-GAT)₃) (P1) and ((TCT-CAA-CTC-GTA-(CH₂)₃-SS)₃-CLIO) (P2) were incubated with a complementary oligonucleotide to evaluate the ability of P1 and P2 to hybridize. The nanoparticles P1 and P2 were potent enhancers of the spin-spin and spin-lattice relaxation processes where the spin-spin relaxation was significantly enhanced by the oligonucleotide hybridization, and rendered the particles potential magnetic sensors. The oligonucleotide hybridization efficiently changed the spin-spin relaxation time of adjacent water protons, the magnetic effects were fully reversible, and the oligonucleotides were recoverable from the sensors. Since the developed nanosensors were essentially nontoxic to mammalian cell, nondegradable oligonucleotide analogs may be coupled to nanoparticles and used to image sequences of nucleic acids.

REFERENCE COUNT: 12

L3 ANSWER 21 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:810494 CAPLUS

DOCUMENT NUMBER: 134:93880

TITLE: "Experimental and theoretical analysis of thiol influence on the behavior of gold nanoparticles"

AUTHOR(S): Ascencio, J. A.; Jose-Yacaman, M.

CORPORATE SOURCE: Instituto Nacional de Investigaciones Nucleares, Amsterdam, 46-202, Neth.

SOURCE: Clusters and Nanostructure Interfaces, [Proceedings of the International Symposium on Clusters and Nanostructure Interfaces], Richmond, VA, United States, Oct. 25-28, 1999 (2000), Meeting Date 1999, 649-654. Editor(s): Jena, Puru; Khanna, Shiv N.; Rao, Bijan K. World Scientific Publishing Co. Pte. Ltd.: Singapore, Singapore.

CODEN: 69APQU

DOCUMENT TYPE: Conference

LANGUAGE: English

AB An exhaustive anal., applying both theor. and exptl. methods in the scale of quantum dots for gold, has been developed to study the characteristic behavior of gold nanoparticles passivated by n-alkyl-thiols. The particular bonding formed of Au-S, which generate several phenomena as the lattice distortion in the clusters, is studied by using force-field approxns. to minimize the energy of a gold aggregate to help in the anal. and interpretation. This study is directed to analyze the direct influence of thiol mols. in the sorting of nanoparticles. Further calcn. for systems of nanoparticles arrays based on the self-assembled phenomena is used to analyze the macrostructure formation and the particular structural changes that can be observed during the electron irradiation

REFERENCE COUNT: 3

L3 ANSWER 22 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:794358 CAPLUS

TITLE: Spectroscopic and spectrophotometric assessments of analytical utilities of metal nanoparticles in biologically relevant systems.

AUTHOR(S): Zhang, Felicia Xin; Daras, Jason G.; Israel, Lisa B.; Han, Li; Lou, Yongbin; Zhong, Chuan-Jian

CORPORATE SOURCE: Department of Chemistry, State University of New York at Binghamton, Binghamton, NY, 13902, USA

SOURCE: Abstracts of Papers - American Chemical Society (2000), 220th, COLL-166

CODEN: ACSRAL; ISSN: 0065-7727

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal; Meeting Abstract

LANGUAGE: English

AB Nanosized particles and their nanostructured materials serve as novel platforms of functional nanomaterials. The work explores the anal. utilities of such platforms using gold and alloy nanoparticles that are either dissolved in solns. or assembled in network thin film architectures. The surface plasmon resonance optical property measured using UV-Vis spectrophotometric method is correlated with nanoparticle reaction and concentration in solution and in thin films. The core-shell reactivities are demonstrated

to be useful for developing strategies in selective detection of biol. relevant thiols. Surface reflection IR spectroscopic technique is used to probe the interfacial chemical derivatizations at interconnecting linkages of core-shell nanoparticle network films. Such interfacial reactivities are demonstrated to be a platform for immobilization of bio-active species such as antibody and antigen on the nanostructured particles for potential surface spectroscopic assays. The results will be discussed to assess the anal. utilities of the core-shell metal nanoparticles.

L3 ANSWER 24 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1999:806398 CAPLUS

DOCUMENT NUMBER: 132:116834

TITLE: Vapour sensing using hybrid organic-inorganic nanostructured materials

AUTHOR(S): Evans, Stephen D.; Johnson, Simon R.; Cheng, Yaling L.; Shen, Tiehan

CORPORATE SOURCE: Department of Physics and Astronomy, University of
Leeds, Leeds, LS2 9JT, UK

SOURCE: Journal of Materials Chemistry (2000), 10(1), 183-188

CODEN: JMACEP; ISSN: 0959-9428

PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Small aromatic organothiols, with the structure HS-C₆H₄-X, were used to stabilize gold nanoparticles. The nature of the functional group, X, is important for controlling the relative strength of the particle-particle and particle-solvent interactions and hence in determining the phys. properties of these systems (e.g. solubility). Particles were stabilized with different ligands for which X = OH, -COOH, -NH₂, -Me and thin films of the particles were formed, by solution evaporation, on microelectrode patterned surfaces. The electronic behavior indicates that conduction can be understood in terms of an activated electron tunnelling model. Finally, preliminary studies were carried out on the effect of exposure to different chemical vapors on the electronic transport properties.

REFERENCE COUNT: 23

L6 ANSWER 1 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Detection of <SYM97>-particles using superconducting tunnel junctions

L6 ANSWER 2 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Method and apparatus for electrical detection of DNA hybridization

L6 ANSWER 3 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI The development and performance of silicon strip modules for the ATLAS forward semi-conductor tracker

L6 ANSWER 4 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Tagging materials for polymers, methods, and articles made thereby

L6 ANSWER 5 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Hairpin sensors using quenchable fluorescing agents for use in detection of target nucleic acids

L6 ANSWER 6 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Fabrication of conductive/non-conductive nanocomposites by laser evaporation

L6 ANSWER 7 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Pressure sensor-dull and procedure for the production as well as use the same
[Machine Translation].

L6 ANSWER 8 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Modeling of piezoresistive sliding coatings

L6 ANSWER 9 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Two dimensional ionizing radiation detector and method for the production thereof

L6 ANSWER 10 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Fabrication of conductive/non-conductive nanocomposites by laser evaporation

L6 ANSWER 11 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Electrochemical based assay processes instrument and labels

L6 ANSWER 12 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Highly sensitive dynamic sensor materials

L6 ANSWER 13 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Experimental study of visible reflection variation in the case of High Temperature
Superconductor ceramics irradiated by excimer lasers

L6 ANSWER 14 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Electrochemical sensor for detection of gaseous and liquid organic compounds

L6 ANSWER 15 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Measurement of LET distribution and dose equivalent on board the space shuttle
STS-65

L6 ANSWER 16 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Backscattering spectroscopy developments for the University of Oxford Scanning
External Proton Milliprobe (SEPM)

L6 ANSWER 17 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI The search of abilities of ceramic-chemical sensors. Introduction

L6 ANSWER 18 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Sulfur K-edge XAFS measurements of fly ash with X-ray excited sample current
detection

L6 ANSWER 19 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Towards a bolometric dark matter detection experiment: underground radioactive
background measurements in the 3 keV-5 MeV energy range with a massive bolometer at
55 mK

L6 ANSWER 20 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Processes and apparatus for detecting the nature of combustion gases

L6 ANSWER 21 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Device for determining magnetizable, electrically conducting particles in an electric
non-conducting liquid medium

L6 ANSWER 22 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Large-area silicon semiconductor detector telescope for identification of primary
cosmic-ray isotopes

L6 ANSWER 23 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Range and energy loss rate for heavy ions in Makrofol and cellulose nitrate

L6 ANSWER 24 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Elemental analysis of matter by the method of scattering of heavy charged particles
at great angles

L6 ANSWER 25 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Absolute determination of the differential source intensity of the DD- and DT-neutrons

L6 ANSWER 26 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Charge collection and charge-collection time in semi-conductor particle detectors

L6 ANSWER 27 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

TI Detection of nuclear particles with semiconductors

L9 ANSWER 1 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN

TI New electrochemical sensors used in flow injection analysis for nitrite/nitrate determination

L9 ANSWER 2 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN

TI New electrochemical sensors for nitrites and nitrates determination in drinking waters

L9 ANSWER 3 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN

TI Pressure sensor film and semi-conductive pressure-sensitive ink for making the sensor

L9 ANSWER 4 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN

TI Devices and methods for analysis of non-ionic solutes and sensors

L9 ANSWER 5 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN

TI Sensor for volatile materials and gases

L9 ANSWER 6 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN

TI Amperometric detection in high performance liquid chromatography in the case of non-conducting eluants

L9 ANSWER 7 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN

TI Detector for gaseous components with semiconductive thin films

L9 ANSWER 8 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN

TI Current-conducting nonaqueous systems formed from non-conducting components. Allyl isothiocyanate-amines containing the hydroxyl group

L10 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1966:468763 CAPLUS

DOCUMENT NUMBER: 65:68763

ORIGINAL REFERENCE NO.: 65:12833b-c

TITLE: Detector for gaseous components with semiconductive thin films

AUTHOR(S): Seiyama, Tetsuro; Kagawa, Shuichi

CORPORATE SOURCE: Kyushu Univ., Fukuoka, Japan

SOURCE: Anal. Chem. (1966), 38(8), 1069-73

CODEN: ANCHAM; ISSN: 0003-2700

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Detection of gases is based on the change due to adsorbed gas in the elec. conductivity of a thin film of semiconductor at temps, as high as 500°. The resistance of 1000-10,000 Å. films of ZnO on fused SiO₂ plates is a few megaohms with an electrode spacing of 10 mm. There is a logarithmic relation between the response of the detector and the concentration of H from 1 to 100% and of EtOH from 0.05 to 2%. The min. detectable concentration is 10 ppb. for H and 100 ppb. for EtOH. The sensitivity of the ZnO thin film decreases gradually.

L15 ANSWER 1 OF 20 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:933377 CAPLUS

TITLE: A novel glucose sensor system with Au nanoparticles based on microdialysis and coenzymes for continuous glucose monitoring

AUTHOR(S): Pan, Min; Guo, Xishan; Cai, Qiang; Li, Guang; Chen, Yuquan

CORPORATE SOURCE: Department of Biomedical Engineering, Biosensor National Special Laboratory, Zhejiang University, Hangzhou, 310027, Peop. Rep. China

SOURCE: Sensors and Actuators, A: Physical (2003), A108(1-3), 258-262

CODEN: SAAPEB; ISSN: 0924-4247

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A novel glucose sensor based on microdialysis technique has been developed for continuous glucose monitoring. It includes: (1) The microdialysis sampling and interval perfusion system, it can prevent electrode from being fouled and it also provides enough time for glucose mol. traversing the microdialysis membrane to establish a dynamic balance, and the sensor can be recovered well, too. (2) A "sandwich" structure glucose sensor based on an aqueous glucose oxidase (GOD) and catalase solution, it is easy to replace the inactive enzyme solution Au interdigital array (IDA) microelectrodes and microgrooves were fabricated on the silicon wafer for electrochem. detns. (3) Continuous glucose monitoring system. The results of in vitro expts. show this glucose sensor has short response time, high sensitivity and good linearity. To improve the stability of liquid enzyme, aqueous colloidal gold nanoparticles was mixed with coenzymes solution The result of expts. shows the repeatability of sensor was improved, and the sensitivity of sensor was enhanced. To the best of our knowledge, this is the first demonstration that aqueous colloidal gold nanoparticles enhance the activity of aqueous enzymes.

REFERENCE COUNT: 12

L15 ANSWER 2 OF 20 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:590701 CAPLUS

DOCUMENT NUMBER: 139:146206

TITLE: Bioconjugate-nanoparticle probes

INVENTOR(S): Garimella, Viswanadham; Storhoff, James J.

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 27 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

PATENT NO. KIND DATE APPLICATION NO. DATE

US 2003143598 A1 20030731 US 2002-291291 20021108

WO 2003081202 A2 20031002 WO 2002-US35888 20021108

PRIORITY APPLN. INFO.: US 2001-348239P P 20011109

AB The invention provides nanoparticle-bioconjugate probes that are useful for detecting target analytes such as nucleic acids. The probes of the invention are stable towards heat and resistant to displacement by thiol containing compds. such as DTT

(dithiothreitol). Epiandrosterone disulfide derivative-modified oligonucleotide probes were prepared and used to bind to a target sequence. The probes had increased stability in the presence of DTT at elevated temperature

L15 ANSWER 4 OF 20 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:320143 CAPLUS

DOCUMENT NUMBER: 138:334056

TITLE: Highly sensitive methods for protein detection in proteomics

INVENTOR(S): Zhang, David Y.; Yi, Jizu

PATENT ASSIGNEE Mount Sinai School of Medicine of New York University, USA

SOURCE: PCT Int. Appl., 25 pp.

PATENT NO. KIND DATE APPLICATION NO. DATE

WO 2003034031 A2 20030424 WO 2002-US33171 20021015

WO 2003034031 A3 20031030

PRIORITY APPLN. INFO.: US 2001-329607P P 20011015

AB The present invention relates to methods for identification and quantification of proteins expressed within a cell. The methods of the invention involve the separation of proteins based on their phys. properties such as, for example, net charge, mol. weight, or immunoreactivity, followed by detection of said proteins using a number of different techniques including (i) ramification-extension amplification method (RAM); (ii) hybridization signal amplification method (HSAM); and (iii) detection with nanodots. The methods of the invention will have a variety of different uses including, but not limited to, uses for screening, for diagnosis and prognosis of disease. The method of the invention are especially useful for identification of proteins that are identified due to the size of the protein, low concentration of the protein, or failure to sep. proteins due to similar phys. properties. PC-3 cells were treated with Scutellaria baicalensis and then the proteins were extracted, labeled with biotin, and separated by 2D gel electrophoresis.

L15 ANSWER 5 OF 20 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:254697 CAPLUS

DOCUMENT NUMBER: 138:364986

TITLE: Electrochemical genosensor based on colloidal gold nanoparticles for the detection of factor V Leiden mutation using disposable pencil graphite electrodes

AUTHOR(S): Ozsoz, Mehmet; Erdem, Arzum; Kerman, Kagan; Ozkan, Dilsat; Tugrul, Berrin; Topcuoglu, Nejat; Ekren, Hayati; Taylan, Muzaffer

CORPORATE SOURCE: Faculty of Medicine, Department of Analytical Chemistry, Faculty of Pharmacy and Department of Medicinal Biology, Ege University, Izmir, 35100, Turk.

SOURCE: Analytical Chemistry (2003), 75(9), 2181-2187

CODEN: ANCHAM; ISSN: 0003-2700

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Electrochem. genosensors for the detection of the Factor V Leiden mutation from polymerase chain reaction (PCR) amplicons using the oxidation signal of colloidal gold

(Au) is described. A pencil graphite electrode (PGE) modified with target DNA, when hybridized with complementary probes conjugated to Au nanoparticles, responded with the appearance of a Au oxide wave at approx. +1.20 V. Specific probes were immobilized onto the Au nanoparticles in two different modes: (a) Inosine-substituted probes were covalently attached from their amino groups at the 5' end using N-(3-dimethylamino)propyl-N'-ethylcarbodiimide hydrochloride (EDC) and N-hydroxysulfosuccinimide (NHS) as a coupling agent onto a carboxylate-terminated L-cysteine self-assembled monolayer (SAM) preformed on the Au nanoparticles, and (b) probes with a hexanethiol group at their 5' phosphate end formed a SAM on Au nanoparticles. The genosensor relies on the hybridization of the probes with their complementary targets, which are covalently immobilized at the PGE surface. Au-tagged 23-mer capture probes were challenged with the synthetic 23-mer target, 131-base single-stranded DNA or denatured 256-base polymerase chain reaction (PCR) amplicon. The appearance of the Au oxidation signal shortened the assay time and simplified the detection of the Factor V Leiden mutation from PCR amplified real samples. The discrimination between the homozygous and heterozygous mutations was also established by comparing the peak currents of the Au signals. Numerous factors affecting the hybridization and nonspecific binding events were optimized. The detection limit for the PCR amplicons was found to be as low as 0.78 fmol; thus, it is suitable for point-of-care applications. REFERENCE COUNT: 41

L15 ANSWER 6 OF 20 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:185701 CAPLUS

TITLE: SPEEK-PVA photoactive polymer blends for the generation of nanosized metal particles

AUTHOR(S): Korchev, A.; Sartin, M.; Slaten, Buster L.; Mills, G.

CORPORATE SOURCE: Department of Chemistry, Auburn University, Auburn, AL, 36849, USA

SOURCE: Abstracts of Papers, 225th ACS National Meeting, New Orleans, LA, United States, March 23-27, 2003 (2003), PHYS-429. American Chemical Society: Washington, D.C.

CODEN: 69DSA4

DOCUMENT TYPE: Conference; Meeting Abstract

LANGUAGE: English

AB Excitation of sulfonated poly(ether ether)ketone, SPEEK, with 350 nm photons in deaerated aqueous solns. containing poly(vinyl alc.), PVA, generates radicals able to reduce Ag(I), Au(III), Pd(II), Pt(IV), Cu(II), Ni(II). In all cases formation of nanometer-sized metallic colloids is observed. Trapped SPEEK radicals seem to exhibit a band at 565 nm participates in the metal ion reduction. This species is detected after nanoparticle formation is completed, and acts as end-point indicator of the photoredn. The photoreactions rates depend strongly on pH, SPEEK/PVA ratio and light intensity. Casting of the colloids allows fabrication of thin polymer films containing metal crystallites. Alternatively, crosslinking SPEEK-PVA films yields materials possessing ion exchange capabilities. Adsorbed metal ions are then photoreduced in the solid state. The kinetics and mechanism of the photoredn. of silver(I) within solid SPEEK-PVA films will be discussed.

L15 ANSWER 7 OF 20 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:909729 CAPLUS

DOCUMENT NUMBER: 138:114435

TITLE: XPS Study of Copper-Doped Carbon Aerogels

AUTHOR(S): Fu, Ruowen; Yoshizawa, Noriko; Dresselhaus, Mildred S.; Dresselhaus, Gene; Satcher, Joe H., Jr.; Baumann, Theodore F.

CORPORATE SOURCE: Massachusetts Institute of Technology, Cambridge, MA, 02139, USA

SOURCE: Langmuir (2002), 18(26), 10100-10104

CODEN: LANGD5; ISSN: 0743-7463

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Cu-doped C aerogels were studied by XPS to determine the chemical nature and distribution of the Cu species in the aerogel framework. The Cu2p spectra of both the organic and C aerogels show a fairly uniform distribution of Cu species in the aerogel network, with a slight increase in Cu content going from the edge to the center of the monolith. The O1s spectra of the Cu-doped organic aerogel indicate that both the carboxyl and hydroxyl groups of the aerogel framework are involved in chelation of the Cu ions. After carbonization, the content of the Cu detected by XPS decreases significantly as the Cu ions are reduced into metallic Cu nanoparticles. These nanoparticles are difficult to detect by XPS because they are coated by a thin C layer and migrate into the C matrix. The C skeleton of the Cu-doped C aerogels is mainly composed of a uniform micro-graphite-like crystalline network, and no Cu-C bonds were detectable in the aerogel. REFERENCE COUNT: 24

L15 ANSWER 8 OF 20 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:752261 CAPLUS

DOCUMENT NUMBER: 137:264164

TITLE: Polymeric nanoparticles for improved solid media

INVENTOR(S): Alexander, James Nelson, IV; Piccolini, Richard John; Gore, Robert Howard; Cruz, Carlos Alfonso; Jiang, Biwang; Lundquist, Eric Gustave; Bortnick, Newman Mayer; Barrett, James Henri; Machleder, Warren Harvey

PATENT ASSIGNEE(S): Rohm and Haas Company, USA

SOURCE: Eur. Pat. Appl., 16 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

PATENT NO. KIND DATE APPLICATION NO. DATE

EP 1245276 A2 20021002 EP 2002-252206 20020327

EP 1245276 A3 20030205

US 2002177522 A1 20021128 US 2002-97258 20020315

AU 2002029190 A5 20021003 AU 2002-29190 20020327

BR 2002001073 A 20030114 BR 2002-1073 20020328

CN 1390878 A 20030115 CN 2002-127505 20020329
JP 2003080064 A2 20030318 JP 2002-96041 20020329
PRIORITY APPLN. INFO.: US 2001-280663P P 20010330
US 2002-97258 A 20020315

AB Solid media useful for a variety of applications, such as sepns., catalysis, drug carriers, sensors, and combinatorial chemical, are disclosed. The solid media are prepared with polymeric nanoparticles (PNPs) having a diameter of 1 to 50 nm, the PNPs including as polymerized units a multi-ethylenically-unsatd. monomer. Also provided are methods for preparing the solid media.

L15 ANSWER 9 OF 20 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:530679 CAPLUS

DOCUMENT NUMBER: 137:303569

TITLE: Direct imaging of self-assembled magnetic nanoparticle arrays. Phase stability and magnetic effects on morphology

AUTHOR(S): Yamamuro, S.; Farrell, D. F.; Majetich, S. A.

CORPORATE SOURCE: Department of Physics, Carnegie Mellon University, Pittsburgh, PA, 15213-3890, USA

SOURCE: Physical Review B: Condensed Matter and Materials Physics (2002), 65(22), 224431/1-224431/9

CODEN: PRBMDO; ISSN: 0163-1829

PUBLISHER: American Physical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Chemical stabilized 7.0 nm Fe and 3.9 nm FePt nanoparticles were self-assembled into thin arrays, and imaged by TEM. The local packing structures and stacking sequences of the arrays were uniquely identified by a combination of bright-field imaging and projected potential image simulations. Close-packed structures, hcp. and fcc, were observed for 7.0 nm Fe nanoparticles, while a loosely packed body centered cubic structure was detected for 3.9 nm FePt nanoparticles as well as face centered cubic and hcp. The body centered cubic structure formation is driven by the large vibrational entropy of particles and the soft interparticle repulsions originating from competing enthalpic and entropic effects on surfactant mol. conformation. The sole anomaly noted is a preference for forming hcp. arrays with odd nos. of layers observed for Fe nanoparticles. This is attributed to the thickness- and layer-diameter-dependent magnetic coupling between superferromagnetically ordered array layers.

REFERENCE COUNT: 38

L15 ANSWER 13 OF 20 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:286166 CAPLUS

DOCUMENT NUMBER: 136:311326

TITLE: Coating compositions containing luminescent semiconductor nanoparticles

INVENTOR(S): Kawa, Manabu

PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 19 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

PATENT NO. KIND DATE APPLICATION NO. DATE

JP 2002114928 A2 20020416 JP 2000-306965 20001006

PRIORITY APPLN. INFO.: JP 2000-306965 20001006

AB The coatings useful for detective applications such as finger print finding, counterfeit detection, etc., contain polymer binders, semiconductor nanoparticles of Zn or Cd type and solvents. Thus, adding 0.4 g a triethylene glycol monomethyl ether (I) 11-mercaptoundecanoate to a dissoln. of apprx. 0.5 g CdSe nanocrystals having ZnS shells and Ph₃PO ligand on surface in 6 mL CH₂Cl₂ and reacting in the dark for 18 h gave an EtOH-soluble product containing I as ligand which replaced for Ph₃PO. Dissolving the product in CH₂Cl₂, adding EtOH, evaporating to remove CH₂Cl₂, mixing with a polyethylene glycol methacrylate 0.5, Me methacrylate 0.2, AIBN 0.05 and a poly(ethylene oxide) 0.2 g gave a solution, a finger print obtained from it after impressing on a paper and polymerization by heat showed orange color.

L15 ANSWER 14 OF 20 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:876103 CAPLUS

DOCUMENT NUMBER: 136:111851

TITLE: Fibre-optic SERS sensors

AUTHOR(S): Viets, Carmen; Hill, Wieland

CORPORATE SOURCE: Institut für Spektrochemie und Angewandte Spektroskopie (ISAS), Dortmund, 44013, Germany

SOURCE: Internet Journal of Vibrational Spectroscopy [online computer file] (2000), 4(2), No pp. given

CODEN: IJVSA6; ISSN: 1362-671X

URL: <http://www.ijvs.com/volume4/edition2/section7.htm>

PUBLISHER: Perkin-Elmer

DOCUMENT TYPE: Journal; (online computer file)

LANGUAGE: English

AB Surface-enhanced Raman scattering (SERS) provides vibrational spectra of small amts. of substance adsorbed at appropriately roughened metal surfaces. By the combination of selective adsorption with mol.-specific spectra, SERS is a promising method in generating chemical sensors with low cross-sensitivities. Fiber-optics can avoid the hazard of freely propagating laser light and they allow the authors to make remote measurements and adjustment-free sample exchange. Fiber-optic SERS sensors with a single fiber guiding both the excitation laser and the Raman scattered light requires the preparation of properly roughened metal films at the tip of the fibers. Several techniques are available to generate SERS-active fiber tips: Slow evaporation of metals forming island films, the vacuum deposition of metal films over nanoparticles, and the evaporation of metals on roughened fiber tips. All of these preps. result in sensor tips with similar enhancements of the Raman scattering intensities, but with different characteristics concerning their applicability.

REFERENCE COUNT: 26

L15 ANSWER 17 OF 20 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:528033 CAPLUS

DOCUMENT NUMBER: 135:277592

TITLE: Nanostructured thin films for electrochemical detection of heavy metal ions

AUTHOR(S): Kariuki, Nancy; Israel, Lisa B.; Maye, Mathew M.; Zhong, Chuan-Jian

CORPORATE SOURCE: Department of Chemistry, State University of New York at Binghamton, Binghamton, NY, 13902, USA

SOURCE: Preprints of Extended Abstracts presented at the ACS National Meeting, American Chemical Society, Division of Environmental Chemistry (2001), 41(2), 126-130

CODEN: PEACF2; ISSN: 1524-6434

PUBLISHER: American Chemical Society, Division of Environmental Chemistry

DOCUMENT TYPE: Journal; (computer optical disk)

LANGUAGE: English

AB From earlier reports it is known that thin film assemblies could be prepared from core-shell gold nanoparticles via one-step exchange -crosslinking-precipitation route. This route involved the use of w-functionalized alkyl thiols (e.g., 11-mercaptoundecanoic acid, MUA) as mol. linkers between gold nanoparticles. The sensitivity and selectivity of the carboxylic acid group-rich MUA-linked Au nanoparticle films in detecting different metal ions was explored. REFERENCE COUNT: 17

L15 ANSWER 20 OF 20 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1998:344579 CAPLUS

DOCUMENT NUMBER: 129:25370

TITLE: Dielectric, paramagnetic, or phosphorescent nanoparticles biosensor for competition assays

INVENTOR(S): Ewart, Thomas G.; Bogle, Gavin T.

PATENT ASSIGNEE(S): Noab Immunoassay Inc., Can.; Ewart, Thomas G.; Bogle, Gavin T.

SOURCE: PCT Int. Appl., 86 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

PATENT NO. KIND DATE APPLICATION NO. DATE

WO 9821587 A1 19980522 WO 1997-CA828 19971107

US 5922537 A 19990713 US 1996-746420 19961108

AU 9748597 A1 19980603 AU 1997-48597 19971107

PRIORITY APPLN. INFO.: US 1996-746420 19961108 WO 1997-CA828 19971107

AB Biosensor technol. based on the labeling entities having particle reporters provides cost competitive readily manufactured assay devices. Submicron particles of uniform dimension in metals, polymers, glasses, ceramics and biol. structures such as phages are used as the labeling entities. Such reporter particles greatly increase the sensitivity and

accuracy, and provide a variety of assay techniques for determining analyte presence in a sample. The particles may have dielec., paramagnetic and/or phosphorescent properties; such particles are particularly useful in a variety of competition type assays. Novel phosphor and phage particles are provided for use as unique labeling entities. Goat anti-human IgG-alkaline phosphatase conjugate was treated with ZnS:Cu:Al phosphor microparticles and then with glutaraldehyde for crosslinking. The particles were added to wells covalently coated with serially diluted human IgG. The crosslinked goat anti-human IgG-alkaline phosphatase bound to the wells in proportion to the concentration of human IgG bound. Another example illustrates direct electron beam excitation of microparticle phosphors at ambient pressure. REFERENCE COUNT: 5

L3 ANSWER 1 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Nonlinear gold nanocluster chemical vapor sensor

L3 ANSWER 2 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Nucleic acid detection based on oligonucleotide-nanoparticle conjugates

L3 ANSWER 3 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Patterned generation of reactive thiolsulfonates/thiolsulfonates on silicon oxide by electrooxidation using electromicrocontact printing

L3 ANSWER 4 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Estimation of Size for 1-2 nm Nanoparticles Using an HPLC Electrochemical Detector of Double Layer Charging

L3 ANSWER 5 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI DNA hybridization assays using metal-enhanced fluorescence

L3 ANSWER 6 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Physical adsorption of N,N'-diphenyl-p-phenylenediamine onto carbon particles: Application to the detection of sulfide

L3 ANSWER 7 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Particles by facile ligand exchange reactions

L3 ANSWER 8 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI The study of structural accessibility of free thiol groups in human low-density lipoproteins

L3 ANSWER 9 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Colloidal particles used in sensing arrays.

L3 ANSWER 10 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Scatter controlled emission for optical taggants and chemical sensors

L3 ANSWER 11 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI A method of capturing and amplifying nucleic acids by hybridization with probes separately labeled with capture ligands and reporter groups

L3 ANSWER 12 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Biogeochemical characterization of particulate organic matter from a coastal hydrothermal vent zone in the Aegean Sea

L3 ANSWER 13 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Adsorption of lead and mercury ions on chemically treated periwinkle shells

L3 ANSWER 14 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Nanoparticles having oligonucleotides attached for hybridization detection of nucleic acids

L3 ANSWER 15 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN
TI A method of capturing and amplifying nucleic acids by hybridization with probes separately labeled with capture ligands and reporter groups

L3 ANSWER 16 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN
TI Colorimetric detection of thiol-containing amino acids using gold nanoparticles

L3 ANSWER 17 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN
TI Analytical methods using the interaction of colloid-immobilized species with species on non-colloidal structures

L3 ANSWER 18 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN
TI Biological applications of quantum dots

L3 ANSWER 19 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN
TI Metal particle-coated DNA microarray production using ferritin

L3 ANSWER 20 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN
TI Magnetic nanosensors for the detection of oligonucleotide sequences

L3 ANSWER 21 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN
TI Scatter controlled emission for optical taggants and chemical sensors

L3 ANSWER 22 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN
TI Analysis of the chromosome sequence of the legume symbiont Sinorhizobium meliloti strain 1021

L3 ANSWER 23 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN
TI Spectroscopic and spectrophotometric assessments of analytical utilities of metal nanoparticles in biologically relevant systems.

L3 ANSWER 24 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN
TI Method for measuring thiol group-containing chemical compound using metal colloid

L3 ANSWER 25 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN
TI Chiral anion exchangers applied to capillary electrochromatography enantioseparation of oppositely charged chiral analytes: investigation of stationary and mobile phase parameters

L3 ANSWER 26 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN
TI On-line detection of sulfur species in light petroleum liquids using gas chromatography and sulfur selective detection

L3 ANSWER 27 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN
TI Method for determination of organic compounds containing thiol-group

L3 ANSWER 28 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN
TI Colloidal particles used in sensing arrays

L3 ANSWER 29 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN
TI Vapour sensing using hybrid organic-inorganic nanostructured materials

L3 ANSWER 30 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN
TI Materials, method and apparatus for detection and monitoring of chemical species

L3 ANSWER 31 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN
TI Secondary ion generator detector for time-of-flight mass spectrometry

L3 ANSWER 32 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN
TI Optical detection of atmospheric pollutants with oriented polymer structures

L3 ANSWER 33 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Methods for the quantitative analysis of organic compounds by derivatization and coupling to immunogenic carriers to raise antibodies for immunoassays

L3 ANSWER 34 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Nanomolar quantification and identification of various nitrosothiols by high performance liquid chromatography coupled with flow reactors of metals and Griess reagent

L3 ANSWER 35 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Stable protein solutions for diagnostics and method of making and using the same

L3 ANSWER 36 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Peptides and their analogs and lipid analog conjugates for coupling to surfaces for binding of lipid layers and hydrophobic proteins

L3 ANSWER 37 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Scanning Probe Microscopy

L3 ANSWER 38 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Determination of cysteine and reduced glutathione in human plasma by liquid chromatography with pulsed amperometric electrochemical detection using a platinum-particles modified glassy carbon electrode

L3 ANSWER 39 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Electrochemical sensors based on compounds used in photographic technology

L3 ANSWER 40 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Mercaptan detection in petroleum fuels

L3 ANSWER 41 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Rapid liquid chromatographic assay of glutathione in cultured cells

L3 ANSWER 42 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Cytoskeleton-dependent surface blebbing induced by the polar solvent N-methylformamide

L3 ANSWER 43 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Preparation of zinc sulfide and cadmium sulfide by thermal degradation of (methanethiolato)zinc and cadmium complexes, $[M(SMe)_2]_n$ ($M = Zn, Cd$)

L3 ANSWER 44 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Aberrant subcellular localization of peroxisomal 3-ketoacyl-CoA thiolase in the Zellweger syndrome and rhizomelic chondrodysplasia punctata

L3 ANSWER 45 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Computer-controlled gas chromatographic/high accuracy mass spectrometric analysis of organic emissions from stationary sources

L3 ANSWER 46 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Detection and measurement of noxious gases

L3 ANSWER 47 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Absorbance changes in the ultraviolet region due to optical rotation as an intrinsic probe of the energy state of submitochondrial particles from beef heart muscle

L3 ANSWER 48 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Localization of thiolacetic esterase in the radicular meristem of pumpkins

L3 ANSWER 49 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI Determination of hydrogen sulfide exposure by dynamic sampling with metallic silver filters

L3 ANSWER 50 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

TI The alkaloids of chinese drugs from Aconitum. VII. Thin-layer chromatography for aconite alkaloids

L3 ANSWER 1 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:931590 CAPLUS

DOCUMENT NUMBER: 139:403148

TITLE: Nonlineal gold nanocluster chemical vapor sensor

INVENTOR(S): Snow, Arthur; Ancona, Mario; Foos, Edward

PATENT ASSIGNEE(S): The Government of the United States of America, as
Represented by the Secretary of the Navy, USA

SOURCE: PCT Int. Appl., 22 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

PATENT NO. KIND DATE APPLICATION NO. DATE

WO 2003098202 A1 20031127 WO 2003-US7 20030107

US 2004029288 A1 20040212 US 2002-145617 20020809

PRIORITY APPLN. INFO.: US 2002-145617 A 20020809

AB The present invention is a chemiresistor for qual. and quant. anal. of chemical species that consists of a very thin film of particles, nanoclusters, deposited on an insulating substrate and contacted by electrodes. The particles have a metallic core, preferably spheroidal, that is <5 nm in diameter and surrounded by an monolayer ligand shell ranging in thickness from 0.4 nm to 2 nm. The Coulomb blockade effects upon which the invention operates result in nonlinear current-voltage characteristics which dramatically improves sensitivity with much lower power dissipation. One property of the ligand shell is that its chemical composition can be chosen to be especially receptive to a particular chemical vapor. REFERENCE COUNT: 8

L3 ANSWER 10 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:168774 CAPLUS

DOCUMENT NUMBER: 138:212598

TITLE: Scatter controlled emission for optical taggants and chemical sensors

INVENTOR(S): Miragliotta, Joseph A.; Benson, Richard C.; Osiander, Robert

PATENT ASSIGNEE(S): The Johns Hopkins University, USA

SOURCE: U.S., 19 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

PATENT NO. KIND DATE APPLICATION NO. DATE

US 6528318 B1 20030304 US 2000-519320 20000306

US 2003109049 A1 20030612 US 2002-303244 20021125

PRIORITY APPLN. INFO.: US 2000-519320 A3 20000306

AB A photonicallly excitable arrangement for chemical sensors and/or taggant is described comprising a first material which is capable of absorbing and

emitting photonic energy and which, when sufficiently excited by photonic energy from an external source, emits stimulated radiation in a first narrow wavelength band; a second material which is capable of absorbing and emitting photonic energy; and a mediating material which causes the photonic emission of the first material to be transferred to the second material which is excited to emit stimulated radiation in a second narrow wavelength at least partially in place of the emission from the first material in the first narrow wavelength band. REFERENCE COUNT: 16

L3 ANSWER 24 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:686508 CAPLUS

DOCUMENT NUMBER: 133:263549

TITLE: "Method for measuring thiol group-containing chemical compound using metal colloid"

INVENTOR(S): *Nemori, Ryoichi*

PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

PATENT NO. KIND DATE APPLICATION NO. DATE

JP 2000266753 A2 20000929 JP 1999-76011 19990319

PRIORITY APPLN. INFO.: JP 1999-76011 19990319

AB A convenient method is provided for accurately measuring a thiol group-containing chemical compound (e.g., alkylthiol, arylthiol, amino acid, protein) contained in a sample (e.g., tissue piece). The method comprises a process for contacting a sample (e.g., gas, liquid, solid) containing a thiol group-containing chemical compound with a dispersion liquid (e.g., colloid) containing metal particles (e.g., silver, gold, copper, platinum), and a process for detecting the color change in the dispersion liquid and/or the state change in the agglutination of metal particles generated by the interaction between the thiol group-containing chemical compound and the metal particles. The method was effectively applied to detecting a thiol group-containing substance such as ethylmercaptan, phenylmercaptan, cysteine, glutathione, metallothionein and breast cancer tissue.

L3 ANSWER 27 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:191332 CAPLUS

DOCUMENT NUMBER: 132:245618

TITLE: "Method for determination of organic compounds containing thiol-group"

INVENTOR(S): *Nemori, Ryoichi; Nishigaki, Junji; Tamura, Yutaka*

PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan

SOURCE: PCT Int. Appl., 25 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

PATENT NO. KIND DATE APPLICATION NO. DATE

WO 2000016094 A1 20000323 WO 1999-JP4933 19990910
AU 9956494 A1 20000403 AU 1999-56494 19990910
EP 1120648 A1 20010801 EP 1999-943265 19990910
PRIORITY APPLN. INFO.: JP 1998-256839 A 19980910 WO 1999-JP4933 W
19990910

AB The title method is suited for detection of proteins or organic compds. which contain alkylmercaptan or thiol-group. The method is based on the observation of the color change of a thin film with contacts with a sample. The thin film is made by mixing micro particles of metal or metallic compds. with a hydrophilic binder.

REFERENCE COUNT: 9

L3 ANSWER 28 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:15474 CAPLUS

DOCUMENT NUMBER: 132:58561

TITLE: "Colloidal particles used in sensing arrays"

INVENTOR(S): Lewis, Nathan S.; Doleman, Brett J.; Briglin, Shawn; Severin, Erik J.

PATENT ASSIGNEE(S): California Institute of Technology, USA

SOURCE: PCT Int. Appl., 48 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

PATENT NO. KIND DATE APPLICATION NO. DATE

WO 2000000808 A2 20000106 WO 1999-US12904 19990608

WO 2000000808 A3 20000323

EP 1084390 A2 20010321 EP 1999-931777 19990608

AU 9948210 A1 20000117 AU 1999-48210 19990609

PRIORITY APPLN. INFO.: US 1998-88680P P 19980609 US 1999-118833P P
19990205 WO 1999-US12904 W 19990608

AB A device for detecting a chemical analyte, said device comprising: a sensor array connected to a measuring apparatus having at least one sensor comprising regions of nonconductive material and conductive material compositionally different than said nonconductive material, wherein said conductive material comprises a nanoparticle; and a response path through said regions of nonconductive material and said conductive material.

L3 ANSWER 29 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1999:806398 CAPLUS

DOCUMENT NUMBER: 132:116834

TITLE: Vapour sensing using hybrid organic-inorganic nanostructured materials

AUTHOR(S): Evans, Stephen D.; Johnson, Simon R.; Cheng, Yaling L.; Shen, Tiehan

CORPORATE SOURCE: Department of Physics and Astronomy, University of
Leeds, Leeds, LS2 9JT, UK

SOURCE: Journal of Materials Chemistry (2000), 10(1), 183-188

CODEN: JMACEP; ISSN: 0959-9428

PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Small aromatic organothiols, with the structure HS-C₆H₄-X, were used to stabilize gold nanoparticles. The nature of the functional group, X, is important for controlling the relative strength of the particle-particle and particle-solvent interactions and hence in determining the phys. properties of these systems (e.g. solubility). Particles were stabilized with different ligands for which X = OH, -COOH, -NH₂, -Me and thin films of the particles were formed, by solution evaporation, on microelectrode patterned surfaces. The electronic behavior indicates that conduction can be understood in terms of an activated electron tunnelling model. Finally, preliminary studies were carried out on the effect of exposure to different chemical vapors on the electronic transport properties.

REFERENCE COUNT: 23

L3 ANSWER 30 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1999:359731 CAPLUS

DOCUMENT NUMBER: 131:13149

TITLE: Materials, method and apparatus for detection and monitoring of chemical species

INVENTOR(S): Wohltjen, Henry; Snow, Arthur W.

PATENT ASSIGNEE(S): Microsensor Systems, Inc., USA; United States of America, Secretary of the Navy

SOURCE: PCT Int. Appl., 56 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

PATENT NO. KIND DATE APPLICATION NO. DATE

WO 9927357 A1 19990603 WO 1998-US25284 19981125

US 6221673 B1 20010424 US 1998-72283 19980504

AU 9917049 A1 19990615 AU 1999-17049 19981125

AU 762381 B2 20030626

EP 1034427 A1 20000913 EP 1998-961814 19981125

JP 2001524668 T2 20011204 JP 2000-522445 19981125

PRIORITY APPLN. INFO.: US 1997-69763P P 19971125

US 1998-72283 A 19980504 WO 1998-US25284 W 19981125

AB Methods for investigating a target environment to determine whether or in what amount a chemical species may be present are described which entail exposing to the environment an article of manufacture comprising a multiplicity of particles in close-packed orientation, the particles comprising a core of conductive metal (e.g., silver, gold, platinum, or palladium) or conductive metal alloy with a coating of a ligand (e.g., a thiol or an amine) which is capable of interacting with the species so that a property (e.g., elec. conductivity) of the multiplicity of particles is altered; subjecting the multiplicity of particles to conditions sufficient for the property to be exhibited; and monitoring the property to determine whether there is, or the amount of, any change as an indication of whether, or in what amount, the species is present. Particles suitable for use in the methods are also described. Apparatus suitable for investigation of a target environment to determine whether or in what amount a chemical species may be present is described

which comprises a substrate suitably configured for presenting a multiplicity of particles supported thereon to contact with the environment; a multiplicity of particles as described above in close-packed orientation supported by the substrate; and a sensor for monitoring the property of the multiplicity of particles which is sensitive to the presence of the analyte. Methods of fabricating the apparatus are described which entail depositing on a substrate a pair of interdigitated electrodes each having a comb-like configuration which are elec. connected, a thin film of a multiplicity of particles capable of interacting with the analyte such that a property of the multiplicity of particles is altered; and connecting the pair of electrodes with a sensor capable of determining a change in the property of the multiplicity of particles. The deposition of a thin film of the multiplicity of particles may entail spraying on the electrodes and on the substrate a solution comprising a salt of each conductive metal to be incorporated in the core, an organic substance having a functional group which is capable of interacting with the species, and a solvent for each of the salt and the substance, the electrodes being at a temperature such that the solvent is flashed away. REFERENCE COUNT: 7

L3 ANSWER 39 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1995:366643 CAPLUS

DOCUMENT NUMBER: 122:329258

TITLE: Electrochemical sensors based on compounds used in
photographic technology

AUTHOR(S): Gorokhovskii, V. M.; Vorob'eva G. S.

CORPORATE SOURCE: Kaz. NITekhnol. Proektn. Inst. Khim.-Fotogr. Prom.,
Kazan, Russia

SOURCE: Zhurnal Nauchnoi i Prikladnoi Fotografii (1995),
40(1), 25-30

CODEN: ZNPFEK; ISSN: 0869-6144

PUBLISHER: Nauka

DOCUMENT TYPE: Journal

LANGUAGE: Russian

AB The following variants were used for fabricating the sensors: (1) using AgBr or AgI microcrystals, Pb3O4, iron oxide based magnetic powders, or a hydrophobic color component as the heterophase and (2) coating the surface of a silver electrode with a silver halide gelatin suspension.

Voltammetric anal. methods were developed for determining photog. and electrochem. active substances (thiosulfate, total active S, i.e. thiols and disulfides).

L3 ANSWER 40 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1994:111409 CAPLUS

DOCUMENT NUMBER: 120:111409

TITLE: "Mercaptan detection in petroleum fuels"

INVENTOR(S): Zrelova, Lyubov V.; Ter-Oganessian, Garri Sh.; Zrelov, Vsevolod N.; Krasnaya, Lyudmila V.; Kurashova, Alla F.; Sakadynskij, Karl I.

PATENT ASSIGNEE(S): GNII Khimmotologii, USSR

SOURCE: U.S.S.R. From: Izobreteniya 1992, (38), 158.

CODEN: URXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Russian
PATENT NO. KIND DATE APPLICATION NO. DATE

SU 1769124 A1 19921015 SU 1990-4843954 19900628
PRIORITY APPLN. INFO.: SU 1990-4843954 19900628

AB Fuel samples are passed through an adsorbent modified by metal ions and dried by heating. The mercaptan content is determined from the magnitude of a formed colored zone. To increase selectivity, sensitivity, accuracy, and speed of the anal., the adsorbent is a zeolite modified by Ag ions (degree of ion exchange 15-60%, particle size 0.05-0.15 mm), and fuel sample is passed through the adsorbent layer at <SYM163>0.5 cm³/min.

L3 ANSWER 46 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1977:588739 CAPLUS
DOCUMENT NUMBER: 87:188739

TITLE: Detection and measurement of noxious gases
INVENTOR(S): Blurton, Keith F.; Sedlak, John M.
PATENT ASSIGNEE(S): Energetics Science, Inc., USA
SOURCE: U.S., 7 pp.

CODEN: USXXAM
DOCUMENT TYPE: Patent
PATENT NO. KIND DATE APPLICATION NO. DATE

US 4042464 A 19770816 US 1975-621554 19751010
US 4127462 A 19781128 US 1977-776419 19770310
PRIORITY APPLN. INFO.: US 1975-621554 19751010

AB Noxious gases, i.e., NO, NO₂, SO₂, mercaptans, and H₂S, are detected and measured in the presence of CO with an electrochem. cell whose sensing electrode comprises a C-supported Au electrochem. oxidation catalyst and is kept at a fixed potential of apprx. 0.4-1.5 V with resp. to a reversible H electrode in the electrolyte. Preferably, the sensing electrode comprises C particles containing catalytic amts. of Au bonded with poly(tetrafluoroethylene) [9002-84-0], thus providing a diffusion electrode. The catalytic activity of C-supported Au electrodes for electrooxidn. of CO is significantly less than that of unsupported Au electrodes, whereas the activities are about the same for the noxious gases to be analyzed.

L3 ANSWER 49 OF 50 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1968:89694 CAPLUS
DOCUMENT NUMBER: 68:89694

TITLE: Determination of hydrogen sulfide exposure by dynamic sampling with metallic silver filters
AUTHOR(S): Falgout, D. A.; Harding, Charles I.
CORPORATE SOURCE: Univ. of Florida, Gainesville, FL, USA
SOURCE: Journal of the Air Pollution Control Association (1968), 18(1), 15-20
CODEN: JPCAAC; ISSN: 0002-2470
DOCUMENT TYPE: Journal

LANGUAGE: English

AB An inexpensive method was developed for the routine determination of atmospheric H₂S and mercaptans. As air is drawn through a Ag metal membrane filter, the sulfide gases react with the Ag surface to decrease its reflectance. This decrease is proportional to sulfide gas exposure. The tarnishing is not affected by O₃ or N oxides and the effect of uv light can be eliminated. Darkening due to particle impingement is prevented by protecting the Ag with a cellulose membrane prefilter.

L7 ANSWER 1 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:965626 CAPLUS

DOCUMENT NUMBER: 140:69882

TITLE: *"Detection of Organic Mercaptan Vapors Using Thin Films of Alkylamine-Passivated Gold Nanocrystals"*

AUTHOR(S): Briglin, Shawn M.; Gao, Ting; Lewis, Nathan S.

CORPORATE SOURCE: Noyes Laboratory, Division of Chemistry and Chemical Engineering, California Institute of Technology, Pasadena, CA, 91125, USA

SOURCE: *Langmuir* (2004), 20(2), 299-305

CODEN: LANGD5; ISSN: 0743-7463

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Alkylamine-capped Au nanocrystals were used as chemical sensitive resistors for the detection of volatile organic mercaptan vapors. Thin (<1 + 10⁻⁴ cm) films of dodecylamine-capped, 6-7 nm diameter Au nanocrystals produced d.c. elec. resistances of 10 k<SYM87> to 10 M<SYM87> when deposited onto interdigitated Au/Cr electrodes. These chemiresistive vapor detectors displayed a reversible increase in d.c. elec. resistance when exposed to nonthiol-containing vapors such as H₂O, acetone, or toluene delivered at a constant fraction (0.05) of their vapor pressure, with relative differential resistance responses to these vapors of <SYM187>5% under such conditions. In contrast, the amine-capped Au nanocrystal films exhibited a much larger, irreversible decrease in resistance upon exposure to vapors possessing the thiol (-SH) functionality, including H₂S, CH₃SH, and propanethiol. Optical spectroscopic and TEM data indicated that the thiols displaced the amine caps, allowing the Au cores to move closer together and in some cases enter into contact, thereby lowering the film resistance. Consistently, the resistance of such films did not decrease upon exposure to octanethiol. For CH₃SH, the rate of resistance change under repeated exptl. conditions allowed extraction of the concentration of analyte over the range 4 ppb to 1.5 ppm in air.

REFERENCE COUNT: 43

L7 ANSWER 2 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:931590 CAPLUS

DOCUMENT NUMBER: 139:403148

TITLE: Nonlinear gold nanocluster chemical vapor sensor

INVENTOR(S): Snow, Arthur; Ancona, Mario; Foos, Edward

PATENT ASSIGNEE(S): The Government of the United States of America, as

Represented by the Secretary of the Navy, USA

SOURCE: PCT Int. Appl., 22 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

PATENT NO. KIND DATE APPLICATION NO. DATE

WO 2003098202 A1 20031127 WO 2003-US7 20030107

US 2004029288 A1 20040212 US 2002-145617 20020809

PRIORITY APPLN. INFO.: US 2002-145617 A 20020809

AB The present invention is a chemiresistor for qual. and quant. anal. of chemical species that consists of a very thin film of particles, nanoclusters, deposited on an insulating substrate and contacted by electrodes. The particles have a metallic core, preferably spheroidal, that is <5 nm in diameter and surrounded by an monolayer ligand shell ranging in thickness from 0.4 nm to 2 nm. The Coulomb blockade effects upon which the invention operates result in nonlinear current-voltage characteristics which dramatically improves sensitivity with much lower power dissipation. One property of the ligand shell is that its chemical composition can be chosen to be especially receptive to a particular chemical vapor.

REFERENCE COUNT: 8

L7 ANSWER 3 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:219952 CAPLUS

DOCUMENT NUMBER: 138:330905

TITLE: Sorptive behavior of monolayer-protected gold nanoparticle films:
Implications for chemical vapor sensing

AUTHOR(S): Grate, Jay W.; Nelson, David A.; Skaggs, Rhonda

CORPORATE SOURCE: Pacific Northwest National Laboratory, Richland, WA,
99352, USA

SOURCE: Analytical Chemistry (2003), 75(8), 1868-1879

CODEN: ANCHAM; ISSN: 0003-2700

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Monolayer-protected gold nanoparticle materials were synthesized and characterized for use as sorptive layers on chemical sensors. Thiols studied as monolayer-forming mols. included dodecanethiol, benzenethiol, 4-chlorobenzenethiol, 4-bromobenzenethiol, 4-(trifluoromethyl)benzenethiol, 4-hydroxybenzenethiol, and 4-aminobenzenethiol. Films of selected monolayer-protected nanoparticle (MPN) materials were deposited on thickness shear mode devices and vapor uptake properties were measured at 298 K. Many, but not all, MPN-based sensing layers demonstrated rapid and reversible uptake of vapors, and sorptive selectivity varies with the monolayer structure. The mass of vapor sorbed per mass of sorptive material was determined and compared with poly(isobutylene) and poly(epichlorohydrin) as examples of simple sorptive polymers that were used on vapor sensors. The nanoparticle-based films considered here were less sorptive than the selected polymers on a per-mass basis. Partition coeffs.,

which measure the mass of vapor sorbed per volume of the sorptive phase, were estimated for these MPN materials and are comparable to or less than those of the polymer layers. Implications for the roles of sorption and transduction in determining the performance of chemical sensors coated with nanoparticle-based films are discussed.

REFERENCE COUNT: 55

L7 ANSWER 4 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:400116 CAPLUS

DOCUMENT NUMBER: 137:194568

TITLE: "A novel hydrogen sulfide room temperature sensor based on copper nanocluster functionalized tin oxide thin films"

AUTHOR(S): *Niranjan, R. S.; Chaudhary, V. A.; Mulla, I. S.; Vijayamohanan, K.*

CORPORATE SOURCE: Physical and Materials Chemistry Division, National Chemical Laboratory, Pune, 411008, India

SOURCE: **Sensors and Actuators, B: Chemical (2002), B85(1-2), 26-32**

CODEN: SABCEB; ISSN: 0925-4005

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A novel room temperature solid-state sensor for the detection of hydrogen sulfide is described. The sensor was fabricated by 1st depositing a thin film of tin oxide on to a glass substrate followed by surface functionalizing with monolayer-protected copper nanoclusters (MPCs) capped with different capping agents prepared as per the Brust synthesis. These nanoclusters enhance the sensitivity of the sensor towards hydrogen sulfide. The environment of copper clusters changes after the exposure to H₂S gas, allowing the access of Cu to gas mols. This further facilitates the electron transfer between cluster to cluster and hence enhances the conductance of the sensor element. The sensitivity of copper clusters capped with different functional groups and with different chain lengths is demonstrated. Such a combined sensor is easy to prepare and needs no covalent chemical. The response time for all the samples is less than 2 min.

REFERENCE COUNT: 28

L7 ANSWER 5 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:291131 CAPLUS

DOCUMENT NUMBER: 137:24706

TITLE: "Thiol-Terminated Di-, Tri-, and Tetraethylene Oxide Functionalized Gold Nanoparticles: A Water-Soluble, Charge-Neutral Cluster"

AUTHOR(S): *Foos, Edward E.; Snow, Arthur W.; Twigg, Mark E.; Ancona, Mario G.*

CORPORATE SOURCE: Naval Research Laboratory, Washington, DC, 20375, USA

SOURCE: **Chemistry of Materials (2002), 14(5), 2401-2408**

CODEN: CMATEX; ISSN: 0897-4756

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A series of gold nanoclusters stabilized by ligands containing short ethylene oxide oligomers of fixed length were prepared and characterized. The thiols

CH₃(OCH₂CH₂)_nSH (where n = 2, 3, and 4) were substituted onto the surface of 1.8-nm hexanethiol-capped gold clusters by a thiol-exchange reaction, and the resulting nanoclusters were characterized by NMR, FTIR, and UV/vis spectroscopies; TGA; and TEM anal. A degree of ligand exchange greater than 99% was achieved, and the gold core diameter remained unchanged in the final material. Of particular interest, the cluster with n = 2 was water-insol., whereas those with n = 3 or 4 were water-soluble. The thin-film elec. conductivities of these clusters were compared with those of alkanethiol-capped clusters of similar chain lengths and found to be roughly 1 order of magnitude greater. In a chemical vapor sensor configuration, this series of clusters displayed strong elec. responses that showed a correlation between the length of the ethylene oxide ligand and the polarity of the vapor. REFERENCE COUNT: 41

L7 ANSWER 6 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1998:785472 CAPLUS

DOCUMENT NUMBER: 130:99542

TITLE: Optical detection of atmospheric pollutants with oriented polymer structures

AUTHOR(S): Dominguez, J. M.; Robillard, J. J.

CORPORATE SOURCE: Gerencia de Catalisis, Instituto Mexicano Del Petroleo, Mexico, D.F., 07730, Mex.

SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (1998), 3417(Photopolymer Device Physics, Chemistry and Applications IV), 70-83

CODEN: PSISDG; ISSN: 0277-786X

PUBLISHER: SPIE-The International Society for Optical Engineering

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Design and characteristics of real-time, high sensitivity, optical sensors for detection of pollutant gases in the atmospheric are discussed. Mol. engineering applied to design of the sensing material leads to good selectivity and sensitivity in the ppm range when the gas plays the role of a dopant in an organic semiconductor. Preparation methods and optical design are also discussed. REFERENCE COUNT: 42

L7 ANSWER 7 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1990:209845 CAPLUS

DOCUMENT NUMBER: 112:209845

TITLE: Role of metal fine particles in semiconductor gas sensors

AUTHOR(S): Yamazoe, Noboru; Tamaki, Jun

CORPORATE SOURCE: Kyushu Univ., Japan

SOURCE: Hyomen (1989), 27(6), 499-507

CODEN: HYMNB7; ISSN: 0367-648X

DOCUMENT TYPE: Journal; General Review

LANGUAGE: Japanese

AB A review with 50 refs. is given on surface elec. conductivity semiconductor gas sensors (for combustible gas, NO₂, mercaptan, H₂, CO, EtOH, etc.), change of properties of sensors by the addition of metals (e.g. Pt, Pd, Ag. etc.), and chemical methods and electronic methods for sensitivity increase.

L7 ANSWER 8 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1986:199190 CAPLUS

DOCUMENT NUMBER: 104:199190

TITLE: Selective detection of sulfur compounds with a gas electrode detector

AUTHOR(S): Seo, Yoshimitsu

CORPORATE SOURCE: Fac. Eng., Kyoto Univ., Kyoto, 606, Japan

SOURCE: Bunseki Kagaku (1986), 35(1), 54-7

CODEN: BNSKAK; ISSN: 0525-1931

DOCUMENT TYPE: Journal

LANGUAGE: Japanese

AB A gas-sensing electrode detector for S compds. consisted of (1) decomposition tube connected to gas chromatog. column (1% tricresyl phosphate, 35-73°), a 0.5 mm + 65 cm U-tube of which one end was reverse U-shaped in which 10 0.3 + 30 mm Pt strings were placed and the tube was placed in an oven held at 950°; (2) sulfide ion electrode as a gas chromatog. detector; (3) absorption liquid containing 0.1M NaNO₃, 0.01M NaOH and 2 + 10⁻⁷M Na₂S. A gas flow rate of 0.04 mL/min effected H₂S gas enrichment in the solution. A linear calibration curve was obtained for 2 + 10⁻¹¹-10⁻⁸ g di-Et sulfide (I)/<SYM109>L pentane. The determination of I, hexyl mercaptan, and Et thiocyanate was effected with 0.098-0.044 standard deviation. The method was applied to the selective determination of S compds. in gasoline with the limit of determination 3 + 10⁻¹³ g/<SYM109>L.

	Hits	Search Text
1	3	"9921934"
2	2	("6,221,673").PN.
3	1	nanoparticl\$4 with alkylamin\$3 with thiol
4	27	nanoparticl\$4 with amin\$3 with thiol\$2
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6	3	"2000014520"
7	3	"200014520"
8	1	"20014520"
9	4244	Perez.inv.
10	6	Perez.inv. and nanoparticl\$4
11	2	("5256574").PN.
12	9	MIME and thiol\$3
13	2	("6221673").PN.
14	6	"1120648"
15	2	("6537498").PN.

	Hits	Search Text
16	4	("2003077625").PN.
17	4	"2003077625"
18	2	"2002146742"
19	2	("2002146742").PN.
20	1688	Hutchison.inv.
21	58	Hutchison.inv. and particles
22	8	(Hutchison.inv. and particles) and ligand
23	378	(sensor\$4 or detect\$4) with (MIME or MIM or "electronic nose" or nanopartil\$3 or partcil\$3 or nanocluster\$3)
24	268	((sensor\$4 or detect\$4) with (MIME or MIM or "electronic nose" or nanopartil\$3 or partcil\$3 or nanocluster\$3)) and (exchang\$4 or substitut\$4 or replac\$5 or displa\$4)
25	178	((((sensor\$4 or detect\$4) with (MIME or MIM or "electronic nose" or nanopartil\$3 or partcil\$3 or nanocluster\$3)) and (exchang\$4 or substitut\$4 or replac\$5 or displa\$4)) and (analyt\$3 or sample\$3)
26	1702	((gas\$3 or vapor\$3 or odor\$3 or odour\$3 or smell\$3) near4 (sensor\$3 or detector\$3 or (electronic near2 nose\$2))) with (exchang\$4 or substitut\$4 or replac\$5 or displac\$4)
27	630	((((gas\$3 or vapor\$3 or odor\$3 or odour\$3 or smell\$3) near4 (sensor\$3 or detector\$3 or (electronic near2 nose\$2))) with (exchang\$4 or substitut\$4 or replac\$5 or displac\$4)) and conduct\$4
28	233	(((((gas\$3 or vapor\$3 or odor\$3 or odour\$3 or smell\$3) near4 (sensor\$3 or detector\$3 or (electronic near2 nose\$2))) with (exchang\$4 or substitut\$4 or replac\$5 or displac\$4)) and conduct\$4) and (analyt\$3 or sample\$3)

	Hits	Search Text
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32	611	((sensor\$4 or detector\$3) near4 (exchang\$4 or substitut\$4 or replac\$5 or displac\$4)) with (sample\$2 or analyt\$2)
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39	2497	((sensor\$4 or detect\$4) near6 competit\$4) near5 (assay\$3 or immunoassays\$3 or binding or bond\$3 or interact\$4 or coupl\$3)
40	1544	((sensor\$4 or detect\$4) near6 competit\$4) near5 (assay\$3 or immunoassays\$3 or binding or bond\$3 or interact\$4 or coupl\$3)) and conduct\$4
41	148	(((((sensor\$4 or detect\$4) near6 competit\$4) near5 (assay\$3 or immunoassays\$3 or binding or bond\$3 or interact\$4 or coupl\$3)) and conduct\$4) and (nonconduct\$4 or insulat\$4 or semiconduct\$4)

	Hits	Search Text
42	1523	(((sensor\$4 or detect\$4) near6 competit\$4) near5 (assay\$3 or immunoassys\$3 or binding or bond\$3 or interact\$4 or coupl\$3)) and conduct\$4) and (function\$3 or group\$4 or radical\$4)
43	146	(((sensor\$4 or detect\$4) near6 competit\$4) near5 (assay\$3 or immunoassys\$3 or binding or bond\$3 or interact\$4 or coupl\$3)) and conduct\$4) and (nonconduct\$4 or insulat\$4 or semiconduct\$4)) and (((sensor\$4 or detect\$4) near6 competit\$4) near5 (assay\$3 or immunoassys\$3 or binding or bond\$3 or interact\$4 or coupl\$3)) and conduct\$4) and (function\$3 or group\$4 or radical\$4))
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47	1906	(436/149,151,183,119,120,111,73,80).CCLS.
48	561	((436/149,151,183,119,120,111,73,80).CCLS.) and sensor\$3